

UNIT

1

Introduction to Cookery

Structure

- 1.0 Introduction
- 1.1 Culinary history
- 1.2 Origin of professional cookery
- 1.3 Career in food service

Learning Objectives

At the end of the unit, the student will be able to

- Narrate the culinary history
- List the names of chefs, who are credited with the origin of professional cookery.

Unit Preview

This unit touches upon the history of cooking and how even accidental discoveries lead to improving taste of food over the ages. It also talks of the origins of professional cookery and who pioneered the concept. These people have turned cookery into an art form. It briefly touches upon the career opportunities available to budding chefs.

1.0 Introduction

Cookery is defined as a “chemical process”, the mixing of ingredients; the application and withdrawal of heat; decision making, technical knowledge and manipulative skills. In the more advanced stages a further element occurs- that of creativity. Cookery is considered to be both an art and technology.

Food preparation is a modern term in professional cookery. It denotes preparation and cooking. It follows a flow pattern which commences with the purchasing and selection materials, their handling, processing and the ultimate presentation of dishes to customers, where “food service” takes over. In French, the word cuisine denotes –the art of cooking-preparing dishes, and the place-kitchen in which they are prepared.

Today’s “food savvy” customers are a widely traveled group. They have an increased exposure to other countries food and restaurants and this has spurred them to have interest in having these cuisines available at home. The result is growth in food outlets specializing in previously ‘unknown’ foods’. The public’s growing interest in grain, legumes, fish, vegetables and fruits, along with a desire to reduce over consumption of animal fat, protein and sodium have helped popularize nutritional cooking. Furthermore, they have spurred fundamental changes in the preparation and presentation of traditional foods.

An evening out for dinner to a restaurant has become a form of entertainment - a restaurant is a destination where one can savor a quality experience.

To provide this experience a number of things go hand in hand. At the front of the house, it’s the manager and his team who provide impeccable service in a beautiful and apt restaurant setup, but the most important figure is the chef who with his brigade of staff churns out exquisite food to satisfying every palate.

Although cooking may have once been considered a less desirable job, today chefs are a new breed- respected, even admired, for their skill, craftsmanship and even artistry. Some chefs have received so much press coverage that their names are household words. The elevation of the status of the chef helps attract bright and talented people to the industry.

1.1 Culinary History

Culinary history takes us back to the times when man first discovered the use of fire. This epoch making discovery of fire brought about the refinement of mankind in all sphere of life. The biggest impact was felt in the preparation of cooked food which eventually over the centuries has now matured into a full fledged science.

The history of cooking is undoubtedly as old as mankind itself. Earlier on, people were most accustomed to food preparation in the countries & regions where they lived, but with the passage of time, and travel becoming an integral part of one's lifestyle, eating habits have changed rapidly.

Culinary history can be observed to have been influenced by the following factors that have all contributed to the development of the modern day cuisine.

- Accidental discovery of fire
- Origin of simple methods of cooking
- Invention of simple cooking appliances
- Geographical influences & the growth of regional cuisines
- Regional cuisines

1.2 Origin of Professional Cookery

The professionalism of cookery came about, with the efforts of several European chefs, such as Escoffier, Brillat Savarin & Paul Bocuse. All of them wrote several books and helped bring about a proper organization of continental cuisine. Paul Bocuse is also credited with the creation of the Nouvelle Cuisine. Escoffier formulated the *Partie System* of kitchen staff organization and also classified stocks and sauces which are the foundation of continental cookery. The French cuisine was also classified by these chefs. The purpose of this classification was to make it easier to study and refine the cuisine and also to provide a means of training cooks in these areas. In fact, any national cuisine can be classified according to this method of identifying its different components.

The classification of all national cuisines is as follows:

- HAUTE CUISINE : the exotic and high class cuisine
- PROVINCIAL CUISINE : Regional cuisines
- BOURGEOISE CUISINE : Middle class cuisine
- NOUVELLE CUISINE : Modern or New Cuisine

This is a modern innovation that eliminates the use of high calorie items in menus. Emphasis is laid on the pre-plated and decorated foods. Glass, black ceramic plates are used to create a good color contrast and make food more presentable. The origin of this cuisine is attributed to Paul Bocuse.

However, the term simple means “New Cuisine” the idea being to suit the modern needs of low calorie foods that are good for the cardio-vascular system

of the human body. The cuisine answers the needs of the modern generation which is very health conscious.

1.3 Career in Food Service

This is an exciting time to begin a career in food service. Interest in dining and curiosity about new foods are greater than ever. More new restaurants open every year. Many restaurants are busy every night, and restaurant chains number among the nation's largest corporations. The chef, once considered a domestic servant, is now respected as an artist and skilled craftsperson.

The growth of the food service industry creates a demand for thousands of skilled people every year. Many people are attracted by a career that is challenging and exciting and, above all, provides the chance to find real satisfaction in doing a job well.

Conclusion

Cooks have attained a celebrity status due to the importance; food preparation has gained over a period of time. Cooking has turned into a lucrative career and many people are aspiring to become chefs today.

Key Terms

Haute cuisine

provincial cuisine

Bourgeoise cuisine

nouvelle cuisine

Summary

Food industry is one of the important industries that provide employment to people. There has been a big change in the perception of people towards this industry and chefs over a period of time. People like Escoffier, Brillat Savarin & Paul Bocuse are attributed with the creation of modern cookery, through their efforts to bring in professionalism in this field. All such efforts have shown their rewards, chefs have become recognized and revered for their talent and are also very highly paid for their gastronomic and creative skills.

Questions

1. Define Cooking.
2. What do you understand by professional cookery?
3. Study in detail about
 - a. Haute cuisine

- b. Nouvelle cuisine
- c. Bourgeoise cuisine

Test your understanding – I

1. Trace the culinary history.
2. What are the factors that have contributed to the development of modern day cuisine?

Test your Understanding – II

1. Name the pioneering chefs, who initiated professional cookery.
2. Classify national cuisines.

Test you Understanding – III

1. What are the avenues available to budding chefs
2. Name top 10 celebrity chefs you have heard of.

UNIT

2

Kitchen Organisation**Structure**

- 2.0 Introduction
- 2.1 Organization of the kitchen staff
- 2.2 The classical brigade
- 2.3 Responsibilities of kitchen brigade
- 2.4 A successful chef needs.

Learning Objectives

At the end of the unit, the student will be able to

- Identify and list the kitchen positions
- List the roles of different position in the chef brigade
- List and emulate the attributes of a chef

Unit Preview

This unit discusses the organization structure of the kitchen staff, which also projects the hierarchy of the kitchen. It shows the career path that is available for a new entrant. The kitchen organization has a basis of segregation, for ensuring operational efficiency. Each person in the kitchen brigade has a role to play; these roles are well defined in most of the organizations. A successful chef should possess the right attitude in order to progress in his/her career.

2.0 Introduction

The kitchen functions as a support area for any F&B outlet such as a restaurant or coffee shop etc... There are various functions that need to be performed by the kitchen teams to ensure that consistency is maintained in food preparation. Every time the same dish is served it should taste the same, look the same and be of the same quantity. This requires a lot of effort and an efficient kitchen brigade. Responsibilities have been chalked out for each and every person of the brigade. A chef has many roles to play right from a manager to a strategic advisor for the restaurant. Initially a chef's role was relegated to the back area, but now more and more restaurants have star chefs, who are capable of attracting clientele.

2.1 Organisation of the Kitchen Staff

2.1.1 The Basis of Kitchen Organization

The purpose of kitchen organization is to assign or allocate tasks so they can be done efficiently and properly and so all workers know what their responsibilities are. The way a kitchen is organized depends on several factors.

2.1.1.1 The Menu

The kinds of dishes to be produced obviously determine the jobs that need to be done. The menu is, in fact, the basis of the entire operation.

2.1.1.2 The Type of Establishment

The major types of food service establishments are as follows:

- Hotels
- Institutional kitchens
- Schools
- Hospitals, nursing homes, and other health-care institutions
- Employee lunchrooms
- Airline catering
- Military food service
- Correctional institutions
- Catering and banquet services
- Fast-food restaurants

- Carry-out or take-out food facilities
- Full-service restaurants

2.1.1.3 The Size of the Operation

The number of customers and the volume of food served.

2.1.1.4 The Physical Facilities, including the Equipment in Use

This is dependent on the unique nature of the operation itself i.e. if the hotel is a large one with many outlets serving different types of cuisines then it becomes necessary to have a kitchen with a large number of skilled cooks, each performing a special function. In smaller operations it is usually normal to have a few skilled cooks who can perform all the functions.

The concept of multi-skilling is catching up in the kitchens. The large kitchen brigades are being replaced by smaller teams of highly skilled and well paid staff. From a purely theoretical point of view the organization of the kitchen staff can be according to two different methods of staff arrangement.

2.2 The Classical Brigade

As you learned earlier in this chapter, one of Escoffier's important achievements was the reorganization of the kitchen. This reorganization divided the kitchen into departments, or stations, based on the kinds of foods produced. A station chef was placed in charge of each department. In a small operation, the station chef may be the only worker in the department. But in a large kitchen, each station chef might have several assistants.

This system, with many variations, is still used today, especially in large hotels with traditional kinds of food service. The major positions are as follows:

2.2.1. Chef

The chef is the person in charge of the kitchen. In large establishments, this person has the title of executive chef. The executive chef is a manager who is responsible for all aspects of food production, including menu planning, purchasing, costing, planning work schedules, hiring, and training.

2.2.2. Chef De Cuisine

If a food service operation is large, with many departments (for example, a formal dining room, a casual dining room, and a catering department), or if it has several units in different locations, each kitchen may have a chef de cuisine. The chef de cuisine reports to the executive chef.

2.2.3 Sous Chef

The sous chef (*soo* shéf) is directly in charge of production and works as the assistant to the executive chef or chef de cuisine. (The word “sous” is French for “under.”) Because the executive chef’s responsibilities may require a great deal of time in the office, the sous chef takes command of the actual production and the minute-by-minute supervision of the staff.

2.2.4 Station Chef/Chef De Partie (CDP)

The station chefs, or *chefs de partie*, are in charge of particular areas of production. The following are the most important station chefs.

- The *sauce chef*, or saucier (so-see-ay), prepares sauces, stews, and hot hors d’oeuvres, and sautéed foods to order. This is usually the highest position of all the stations.
- The *fish cook*, or poissonier (pwah-so-nyay), prepares fish dishes. In some kitchens, this station is handled by the saucier.
- The *vegetable cook*, or entremetier (awn-truh-met-yay), prepares vegetables, soups, starches, and eggs. Large kitchens may divide these duties among the vegetable cook, the fry cook, and the soup cook.
- The *roast cook*, or rôtiisseur (ro-tee-sur), prepares roasted and braised meats and their gravies and broils meats and other items to order. A large kitchen may have a separate *broiler cook*, or grillardin (gree-ar-dan), to handle the broiled items. The broiler cook may also prepare deep-fried meats and fish.
- The *pantry chef*, or garde manger (gard-mawn-zhay), is responsible for cold foods, including salads and dressings, pâtés, cold hors d’oeuvres, and buffet items.
- The *pastry chef*, or pâtissier (pa-tees-syay), prepares pastries and desserts.
- The *relief cook*, *swing cook*, or tournant (toor-nawn), replaces other station heads.
- The expediter, or aboyeur (ah-bwa-yer), accepts orders from waiters and passes them on to the cooks on the line.

The expediter also calls for orders to be finished and plated at the proper time and inspects each plate before passing it to the dining room staff. In many restaurants, this position is taken by the head chef or the sous chef.

2.2.5 Cooks and Assistants

Cooks and assistants in each station or department help with the duties assigned to them. For example, the assistant vegetable cook may wash, peel, and trim vegetables.

With experience, assistants may be promoted to station cooks and then to station chefs.

2.3 Responsibilities of Kitchen Brigade

2.3.1 Responsibilities of the Executive Chef

- Responsible for overall smooth functioning of food production areas.
- Compiling of new menus.
- To advice on purchase of equipment and raw materials.
- Responsible for planning events.
- Good inter personal skills to interact with customers, clients and guest.
- Planning, Coordinating, Budgeting, Controlling

2.3.2 Responsibilities of the Sous Chef

- In the absence of Executive Chef, he is in charge of all food production areas.
- Indenting
- Food costing
- Preparing duty rosters
- Training the staff
- Hygiene and sanitation
- Standardization and quality control

2.3.3 Responsibilities of Other Chefs

- Smooth functioning of their areas.
- Maintaining Food cost and Quality

2.4 A Successful Chef Needs

2.4.1 Level of Skills and Experience

2.4.1.1 Supervisory Skills

The head of a food service kitchen, whether called *executive chef*, *head chef*, *working chef*, or *dietary director*, must have management and supervisory skills as well as a thorough knowledge of food production. Leadership positions require an individual who:

- Understands organizing and motivating people,
- Planning menus and production procedures,
- Controlling costs and managing budgets,
- Purchasing food supplies and equipment,
- Instruct workers,
- Control quality.

2.4.1.2 Skilled and Technical

- The cooks are the backbone.
- They carry out the actual food production.
- They must have knowledge of and experience in cooking techniques.
- Function well, coordinate.

2.4.1.3 Entry Level

- No particular skills or experience.
- As knowledge and experience increases Complex tasks are given making them skilled cooks.
- Presently many cooks are graduates of one or more years from cooking schools.

2.4.2 Attitudes and Behavior in the Kitchen

Attitudes are more important than skills because a good attitude helps you not only learn skills but also persevere and overcome many difficulties.

2.4.2.1 Positive Attitude Towards the Job

- Like cooking and want to do it well.

- Enjoyment comes from the satisfaction of doing your job well.
- Cook with a positive attitude works quickly, efficiently, neatly, and safely.

2.4.2.2 Staying Power

- Food service requires physical and mental stamina, good health, and a willingness to work hard.
- You may be working evenings and weekends when everyone else is playing.

2.4.2.3 Ability to Work with People

- Food service work is team work.
- Can't afford to let ego problems, petty jealousy, departmental rivalries, and feelings about other people get in way of your job.
- Self-control is more valued today.

2.4.2.4 Eagerness to Learn

- There is more to learn about cooking than you will learn in a life time.
- Greatest chefs in the world are the first to admit that they have more to learn.

2.4.2.5 A Full Range of Skills

- Most people who become professional cooks do so because they like to cook.
- To be successful, a cook must understand and manage food cost, inventory and other financial matters.

2.4.2.6 Experience

- One of our most respected chefs has said, "you don't really know how to cook a dish until you have done it a thousand times".
- If you want to become an accomplished cook you need practice, practice & more practice.

2.4.2.7 Dedication to Quality

- The only distinction worth making is between well-prepared food and poorly prepared food.

- There are good hamburgers and French fries, and there are bad hamburgers and French fries.
- Whether you work in a fancy restaurant, a fast-food outlet, a college cafeteria, or a catering house, you can do your job well or not. The choice is yours.

2.4.2.8 Good Understanding of the Basics

- Experimentation and innovation in cooking are the order of the day.
- Chefs who seem to be most revolutionary are the first to insist on the importance of solid grounding in basic techniques & classic methods.
- In order to innovate, you have to know where to begin.
- For the beginner, knowing the basics will help you take better advantage of your experience.

Conclusion

The kitchen thus constituted makes it for efficient functioning. The strength of every outlet is its staff and the interaction between them. The kitchen and the service staff together have to be well coordinated for achieving the desired results. A chef with the right attitude can overcome all problems and meet the goals set by the management.

The scope for progress in career is vast for any aspiring chef. Practice makes perfect. Every budding chef has to practice a lot to become perfect in his skills, learn and understand the basics well, apply the learnt knowledge with creativity.

Key Terms

Sous chef	Chef de partie (CDP)
Saucier	Poissonier
Entremetier	Rôtisseur
Grillardin	Garde manger
Pâtissier	Tournant
Aboyeur	

Summary

The chef wears various hats, from an administrator to a manager. The skills involved are soft skills and man management. At times the chef has to become a problem solver and handle emergency situations in the kitchens. Tempers run high in the kitchens, sometimes people lose their cool and create situations, which have to be handled delicately by the chef. Whenever required, during busy hours or during manpower crisis senior chefs too have to pull their sleeves up and join the ground level staff. This itself suggests that chefs have to have a right attitude and be able to think on their toes when situations arise.

Questions

1. Discuss the purpose of kitchen organization?
2. Define a menu.
3. Describe Institutional kitchens.
4. List the jobs to be performed by Chef de partie.
5. Differentiate between the job responsibilities of an Executive chef and sous chef.

Test Your Understanding – I

1. What is the basis of Kitchen organization?
2. What are the different designations found in the modern kitchen?

Test your understanding – II

1. List the responsibilities of an Executive Chef.
2. List the responsibilities of a Sous Chef.

Test your Understanding – III

1. What are the supervisory skills required to become a successful chef?
2. What are the attitudes and behavior to be maintained by a chef?

UNIT

3

Sanitation and Safety

Structure

- 3.0 Introduction
- 3.1 Personal/kitchen hygiene:
- 3.2 Uniforms and protective clothing:
- 3.3 Safety procedure in handling equipment:
- 3.4 Awareness of local laws rules and regulations
- 3.5 Food storage
- 3.6 Food handling and preparation

Learning Objectives

At the end of the chapter, the student will be able to

- Appreciate the importance of personal hygiene and follow it
- Learn the parts of a chef uniform and its importance
- List the routine followed for kitchen safety, food storage and kitchen hygiene.

Unit Preview

‘Cleanliness is next to Godliness’ – it is essential that a chef at any designation maintains proper levels of sanitation and hygiene. This includes both personal hygiene and sanitation of work space.

Food and food handlers are the quickest and the easiest means of spreading food borne illnesses. These could take up epidemic proportions if left unchecked. A food handler with common cold or flu is capable of passing it on to his coworkers and even the guests.

Bacterial growth is quickest at room temperatures and if leftovers are not handled properly they could cause food poisoning too. Any such accident or occurrence can spell disaster for the outlet.

3.0 Introduction

Professionalism is an attitude that reflects pride in the quality of your work. One of the most important ways of demonstrating professional pride is in the area of sanitation and safety. Pride in quality is reflected in your appearance and work habits. Poor hygiene, poor grooming and personal care, and sloppy work habits are nothing to be proud of.

Even more important, poor sanitation and safety can cost a lot of money. Poor food handling procedures and unclean kitchens cause illness, unhappy customers, and even fines, summonses, and lawsuits. Food spoilage raises food costs. Poor kitchen safety results in injuries, medical bills, and workdays lost. Finally, poor sanitation and safety habits show lack of respect for your customers, for your fellow workers, and for yourself.

3.1 Personal / Kitchen Hygiene

Most of the food-borne disease is caused by bacteria, spread by food workers or handlers. Hence the first step in preventing food-borne disease is good personal –hygiene.

3.1.1 Do's for Personal Hygiene

- Bath or shower daily.
- Wear clean uniforms and aprons.
- Keep hair neat and clean. Always wear a hat or hairnet.
- Keep mustaches and beards trimmed and clean. Better yet, be clean shaven.

- Wash hands and exposed parts of arms before work and as often as necessary during work, including:
- After eating, drinking, or smoking.
- After using the toilet.
- After touching or handling anything that may be contaminated with bacteria.
- Cover cough and sneezes, and then wash hands.
- Keep your hands away from your face, eyes, hair and arms.
- Cover cuts or sores with clean bandages.
- Use spoons for tasting not your finger.

3.1.2 Don'ts for Personal Hygiene

- Do not work with food if you have any communicable disease or infection.
- Keep fingernails clean and short. Do not wear nail polish.
- Do not smoke or chew gum or tobacco while on duty.
- Do not sit on worktables.
- Avoid wearing jewelry in the kitchen.
- Do not use kitchen sinks for personal washing or for spitting.

3.1.3 Procedure for Washing Hands

- Wet your hands with hot running water. Use water as hot as you can comfortably stand, but at least 100°F (38°C).
- Apply enough soap to make a good lather.
- Rub hands together thoroughly for 20 seconds or longer, washing not only the hands but the wrists and the lower part of the forearms.
- Using a nail brush, clean beneath the fingernails and between the fingers.
- Rinse hands well under hot running water. If possible, use a clean paper towel to turn off the water to avoid contaminating the hands by contact with soiled faucets.
- Dry hands with clean single-use paper towels or a warm-air hand dryer

3.1.4 Guidelines for Using Disposable Gloves

- Wash hands before putting on gloves or when changing to another pair. Gloves are not a substitute for proper hand-washing.
- Remove and discard gloves, wash hands, and change to a clean pair of gloves after handling one food item and before starting work on another.
- In particular, never to fail to change gloves after handling raw meat, poultry, or seafood. Gloves are for single use only.
- Remember that the purpose of using gloves is to avoid cross-contamination.
- Change to a clean pair of gloves whenever gloves become torn, soiled, or contaminated by contact with an unsanitary surface.

3.2 Uniforms and Protective Clothing

“More of a protective clothing than uniform.” The chef’s uniform consists of the following:-

3.2.1 Toque/Headwear

- Keeps the head cool and prevents the hair falling into the food.
- Cotton/cloth caps are difficult to maintain whereas, paper caps are disposable hence they are neat.
- The number of pleats on the chef cap indicates the number of ways in which an egg can be prepared.

3.2.2 Scarf/Neckerchief

- Absorbs sweat.
- Identification/designation.

3.2.3 Double breasted jacket

- Protects the chest and front.
- Easy to remove over head or side ways.
- Cotton cloth buttons – heat resistant.

3.2.4 Apron

- Below knee level.
- Double protection prevents the jacket & trousers from becoming dirty.

3.2.5 Cotton checked trousers.

- Double shade hides the dirt.
- Identifies designation.

3.2.6 Shoes and Socks.

- Clogs can be used but it is expensive
- Metal frame in front protects the toes.
- Easy to remove legs.
- Socks
- Absorbs sweat.
- Provides good grip.
- Steady steps while walking.

3.3 Safety Procedure in Handling Equipment

- Kitchen work usually considered safe in comparison with industrial jobs.
- Minor injuries from cuts and burns are very common.
- Serious injuries too are possible.

3.3.1 Safe Work Place

It is much easier to develop and practice habits that prevent accidents if safety is built into the work place.

- Structure, equipment, and electric wiring in good repair.
- Non-slip floors.
- Adequate lighting on work surfaces and in corridors.
- Clearly marked exits.
- Equipment supplied with necessary safety devices.
- Heat-activated fire extinguishers over cooking equipment, especially deep fryers.
- Conveniently posted emergency equipment, such as fire extinguishers.
- Clearly posted emergency telephone numbers
- Smooth traffic patterns to avoid collisions

3.3.2 Preventing Cuts

Do's

- Keep knives sharp
- Use a cutting board
- Pay attention to your work
- Cut away from yourself and other workers
- Use knives only for cutting
- Clean knives carefully
- Store knives in a safe place
- Carry knives properly
- Keep breakable items out of the food production area
- Sweep up, don't pick up, broken glass
- Discard chipped or cracked dishes and glasses
- Use special container for broken dishes and glasses
- If there is broken glass in the sink, drain the sink
- Remove all nails and staples when opening crates and cartons

Don'ts

- Don't try to catch a falling knife
- Don't put knives in a sink, under water
- Don't put breakable items in a pot sink.

3.3.3 Preventing Burns:

- Always assume a pot handle is hot
- Use dry pads or towels to handle hot pans
- Keep pan handles out of the aisle
- Don't fill pans so full that they are likely to spill hot food
- Open lids away from you
- Get help when moving heavy containers of hot food

- Use care when opening compartment steamers
- Make sure gas is well vented
- Wear long sleeves and a double-breasted jacket
- Dry foods before putting them in frying fat
- When placing foods in hot fat, let them fall away from you
- Keep liquids away from the deep fryer
- Warn service people about hot plates
- Always warn people when you are walking behind them with hot pans.

3.3.4 Preventing fire

Do's

- Know where fire extinguishers are located
- Use the right kind of extinguisher.
- There are three classes of fires and fire extinguishers:
- Class A fires: wood, paper, cloth, ordinary combustibles.
- Class B fires: burning liquids, such as grease, oil, gasoline
- Class C fires: switches, motors, electrical equipment, and so forth
- Keep a supply of salt or baking soda handy to put out fires on range tops.
- Keep hoods and other equipment free from grease build-ups
- Smoke only in designated areas
- If a fire alarm sounds and if you have time, turn off all gas and electrical appliances before leaving.
- Keep fire doors closed
- Keep exits free from obstacles.
- Preventing Injuries from Machines and equipment.
- Use all guards and safety devices
- Unplug electrical equipment before cleaning
- Wear properly fitting clothing and tuck in apron strings

- Use equipment only for the purpose intended
- Preventing Falls
- Clean up spills immediately
- Throw salt on a slippery spot to make it less slippery
- Keep aisles and stairs clear and unobstructed
- Walk, don't run
- Preventing Strains And Injuries
- Lift with the leg muscles, not the back.
- Always stand giving equal weight on both the legs.
- Use trolley/cart to move heavy objects or get help.

Don'ts

- Don't leave hot fat unattended on the range
- Do not use any equipment unless you know its operation
- Don't touch or remove food from any kind of equipment while it is running.
- Do not touch or handle electrical equipment with wet hands
- Do not spill water/oil, etc.
- Do not carry objects too big to see over
- Do not lean or bent unnecessarily while working or do work in that way.
- Don't turn or twist the back while lifting and make sure your footing is secure.

3.4 Awareness of Local Laws Rules and Regulations

- Shops and establishment acts.
- Municipal regulations.
- Guidelines of Fire department.
- Environment and pollution control board.
- PFA and FDA guidelines

3.5 Food Storage

The following rules of safe food storage have two purposes:

1. To prevent contamination of foods
2. To prevent growth of bacteria that may already be in foods, Temperature control is an important part of food storage. Perishable foods must be kept out of the Food Danger Zone—41°F to 135°F (5°C to 57°C)—as much as possible, because these temperatures support bacterial growth. See chart of important temperatures below:

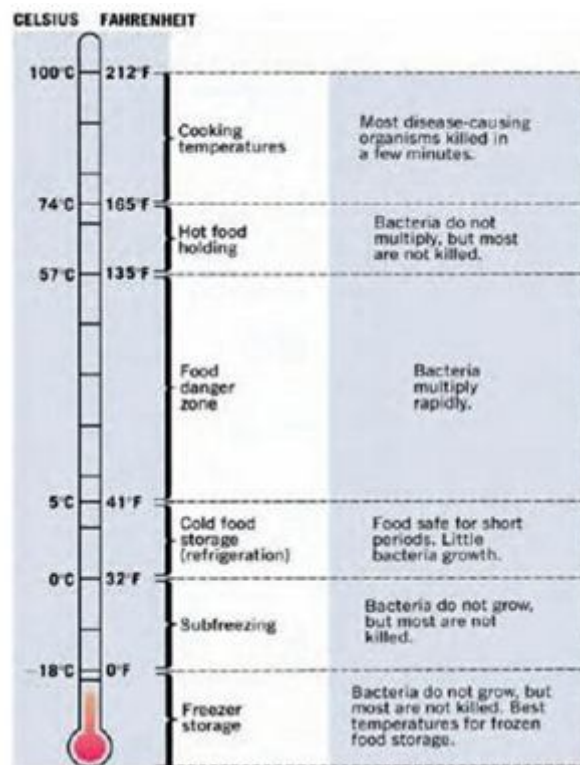


Fig 3.1

3.5.1 Receiving

- Safe food handling begins the moment food is unloaded from the delivery truck. In fact, it begins even earlier than this, with the selection of good, reputable suppliers. Keep the receiving area clean and well lit.
- Inspect all deliveries. Try to schedule deliveries during non-peak hours to allow proper time to inspect the items. For the same reason, try to schedule deliveries so they arrive one at a time.

- Reject shipments or parts of shipments that are damaged or not at the proper temperature. Frozen foods should show no signs of having been thawed and refrozen.
- Label all items with the delivery date or a use-by date.
- Transfer items immediately to proper storage.

3.5.2 Dry Food Storage

Dry food storage pertains to those foods not likely to support bacterial growth in their normal state. These foods include:

- Flour
 - Sugar and salt
 - Cereals, rice, and other grains
 - Dried beans and peas
 - Ready-prepared cereals
 - Breads and crackers
 - Oils and shortenings
 - Canned and bottled foods (unopened)
1. Store dry foods in a cool, dry place, off the floor, away from the wall, and not under a sewer line.
 2. Keep all containers tightly closed to protect from insects, rodents, and dust. Dry foods can be contaminated, even if they don't need refrigeration.

3.5.3 Freezer Storage

1. Keep frozen foods at 0°F (−18°C) or lower.
2. Keep all frozen foods tightly wrapped or packaged to prevent freezer burn.
3. Label and date all items.
4. Thaw frozen foods properly. Do not thaw at room temperature, because the surface temperature will go above 41°F (5°C) before the inside is thawed, resulting in bacterial growth.

These methods may be used:

- In refrigerator
- Under cold running water
- In a microwave oven, if the item is to be cooked or served immediately

3.5.4 Refrigerator Storage

- Keep all perishable foods properly refrigerated. Note that the lower limit of the Food Danger Zone (41°F/5°C) is only the upper limit for refrigerator storage. Most foods keep even better at lower temperatures. The major exception is fresh fruits and vegetables, which are not considered potentially hazardous foods.
- Keep refrigerator doors shut except when removing or putting in foods.
- Keep shelves and interiors of refrigerators clean.
- Store raw and cooked items separately if possible.
- If raw and cooked foods must be kept in the same refrigerator, keep cooked foods above raw foods. If cooked foods are kept below raw foods, they can become contaminated by drips and spills. Then, if they are not to be cooked again before serving, they may be hazardous.
- Keep refrigerated foods wrapped or covered and in sanitary containers.
- Chill foods as quickly as possible over ice or in a cold-water bath before placing in the refrigerator. A gallon of stock placed in a refrigerator hot off the stove may take 10 hours to go below 5°C, giving bacteria plenty of time to grow.
- When holding foods such as protein salads in a cold bain-marie or refrigerated table for service, do not heap the food above the level of the container. The food above this level will not stay cold enough.
- Do not let any unsanitary surface, such as the bottoms of other containers, touch any food.

3.5.5 Hot Food Holding

- To keep foods hot for service, use steam tables or other equipment that will keep all parts of all foods above 57°C at all times.
- Keep foods covered.

- Bring foods to holding temperature as quickly as possible by using ovens, steamers, range-top pots and pans, or other cooking equipment. Do not warm cold foods by placing them directly in the steam table. They will take too long to heat, and bacteria will have time to grow.
- Do not let ready-to-eat foods come in contact with any contaminated surface.

3.6 Food Handling and Preparation

We face two major sanitation problems when handling and preparing food. The first is *cross-contamination*.

- The second problem is that, while we are working on it, food is usually at a temperature between 5°C to 57°C, or in the Food Danger Zone. The lag phase of bacteria growth helps us a little but, to be safe, we must keep foods out of the danger zone whenever possible.
- Start with clean, wholesome foods from reputable purveyors. Whenever applicable, buy government-inspected meats, poultry, fish, dairy, and egg products.
- Handle foods as little as possible. Use tongs, spatulas, or other utensils instead of hands when practical.
- Use clean, sanitized equipment and worktables.
- Clean and sanitize cutting surfaces and equipment after handling raw poultry, meat, fish, or eggs and before working on another food.
- Clean as you go. Don't wait until the end of the workday.
- Wash raw fruits and vegetables thoroughly.
- When bringing foods out of refrigeration, do not bring out more than you can process in 1 hour.
- Keep foods covered unless in immediate use.
- Limit the time that foods spend in the Food Danger Zone.
- Cook foods to Minimum Safe Internal Temperatures.
- Taste foods properly. With a ladle or other serving implement, transfer a small amount of the food to a small dish. Then taste this sample using a clean spoon. After tasting, do not use either the dish or the spoon again. Send them to the washing station or, if using disposables, discard them.

- Boil leftover gravies, sauces, soups, and vegetables before serving.
- Don't mix leftovers with freshly prepared foods.
- Chill all ingredients for protein salads and potato salads *before* combining.
- Cool and chill foods quickly and correctly, as explained in the following section.
- Chill custards, cream fillings, and other hazardous foods as quickly as possible by pouring them into shallow, sanitized pans, covering them, and refrigerating. Do not stack the pans.

Conclusion

Reputation is essential for any food provider. There have been many examples of contaminated food served and the guests falling ill. Such things only lead to a bad reputation and loss of revenue for the establishment. Small incidents such as stapler pins, rings, hair, insects (cockroaches etc...) found in food leave a bad impression about the hotel and its levels of hygiene. Many professional bodies have been constituted, to check and certify establishments, for maintaining proper levels of hygiene. HACCP and ISO are two such organizations that certify hotels according to a set scale and give certification on compliance.

Key Terms

Toque/Headwear

Freezer burn

Thaw

Cross contamination

HACCP

ISO Certification

Summary

To summarize, this chapter shows why personal hygiene is important and also how it effects the reputation of the organization. Apart from personal grooming the workplace has to be kept neat and rodent, insect free at all times. Flies, cockroaches are pests that have to be handled during the initial stages before they attain epidemic proportions.

Raw material and processed food has to be stored at the right time and temperatures. Any deviation can become a cause for a serious food hazard. When raw meat is stored with cooked meat, there are chances of cross contamination and the food may become inedible. Temperatures play an important role in storage. Food has to be stored at temperatures when the likelihood of bacterial growth is minimal. Temperature ranges have been specified for refrigeration, which when strictly followed can reduce the threat of food poisoning.

Questions

1. How often should you wash your hands when working on food?
2. Why is temperature control one of the most effective weapons against bacterial growth?
3. What are some important temperatures to remember?
4. What is the importance of cleaning and sanitizing equipment?
5. Chef uniforms are meant to protect chefs from accidents – Comment.
6. What points are to be kept in mind to make the kitchen a safe workplace?
7. What are the main to store foods safely?
8. What is receiving in the kitchen and how are dry foods stored?
9. Proper refrigerator storage is essential to keep food properly. How?
10. What do you understand by food handling, what can you do to prevent cross contamination?

Test your understanding – I

1. List the do's and don'ts of personal hygiene.
2. What does the chef uniform comprise of? Why?

Test your Understanding – II

1. What are the precautions to be taken to prevent accidents in the kitchen?
2. What safety measures can one take to prevent cuts and bruises?
3. List the 'don'ts' in fire prevention.

Test your Understanding – III

1. What are rules to be followed for food storage?
2. Classify types of storage?

Tools and Equipments

Structure

- 4.0 Introduction
- 4.1 Selection of kitchen equipments
- 4.2 Classification of equipments
- 4.3 Safety precautions while handling equipments
- 4.4 Procedure for manual dishwashing

Learning Objectives

- At the end of the chapter, the student will be able to
- Name and identify equipment used in the kitchen
 - Differentiate between small and large equipment
 - Follow safety precautions while handling equipment.

Chapter Preview

Every skill is incomplete without the right tool. Each trade has its tools, which have to be used to capacity for giving the desired results. The kitchen, be it at home or a professional one depends on tools, such as, knives, ladles, pots,

pans, mixers & grinders, microwaves, to name a few. A chef is required to use numerous tools, every day during the course of operation. It is not just the use of tools but also the maintenance of tools, which has to be emphasized on. Well maintained tools last longer and some of the tools used are expensive and could become difficult to replace in case they stop working due to improper usage.

There have been accidents caused due to improper usage of tools. Fingers chopped in mincers/mixers, cuts and bruises due to knives and burns and scalds due to fire and hot liquids (boiling stock etc...)

4.0 Introduction

Thorough knowledge of equipment is essential for success in the kitchen. Few food service operations depend on nothing more than a range and an oven, an assortment of pots and pans, and knives and other hand tools. Modern technology continues to develop more and more specialized and technically advanced tools to reduce kitchen labor. Much of this equipment is so complex or so sophisticated that only firsthand instruction and practice will teach you how to operate it effectively and safely. Other items, especially hand tools, are simple and need no explanation but require much practice to develop good manual skills.

4.1 Selection of Kitchen Equipments

Kitchen equipment is to be chosen very carefully as it is not only very expensive, it can cause operational difficulties in case if the right type of equipment is not purchased.

The following points must be considered while purchasing equipments:

- Over all dimensions - in relation to space available in the kitchen.
- Weight of the equipment – type of flooring and easy movement within the kitchen.
- Drainage – provision of drainage
- Water availability - easy access to the water points
- Capacity of the machine – suits the need of the operation and forecasted customer numbers.
- Speed & efficiency of the equipments
- Operational friendly- easy to operate
- Maintenance requirements

- Accessories & attachments
- Noise / pollution & hazards
- Availability of spares & service
- Ergonomic requirements.
- Cost effective, (savings on fuel, power)
- Environment friendly. E.g. choosing a tandoor as per the requirement, lava stone griller instead of normal gas grill as the heat is retained longer in a lava stone hence consumption of less gas.

4.2 Classification of Equipments

The knowledge of how to select, use and care for tools and equipment is a crucial part of mastering basic cooking techniques.

Kitchen equipment can be broadly classified into:

- Hand tools
- Small Equipment
- Pots, pans, moulds
- Large equipment's

4.2.1 Hand Tools



Fig 4.1

- Knives should be treated with a great deal of respect and care.
- Remember to always keep knives clean, sharp and store them carefully.
- Remember to use them only on appropriate surfaces.
- A wide array of knives is available to suit specific functions.
- You have the chef's knife, boning knife, paring knife, carving knife, bread knife and utility knives, also Chinese choppers, cleavers, filleting knives and turning knives.

4.2.2 Sharpening Tools

a. Sharpening stone. These are essential for knives. The grit - that is the coarseness or fineness of the stone surface, abrades the blade edge, creating a sharp cutting edge. These are made of carborundum.

b. Steels - should be used both immediately after sharpening the blade and also in between sharpening. They come with coarse, medium and fine grade.

4.2.3 Small Tools

- Rotatory peelers
- Parsienne scooper
- Kitchen fork
- Palette knife
- Whips
- Offset spatulas
- Pastry bags

Other hand tools include rubber scrappers, ladles of various sizes, skimmers, spiders, slotted spoons, rolling pins & cutting boards.

4.2.4 Small Equipment

Can be categorized according to general functions - measuring, straining, and sifting

4.2.4.1 Measuring

- Pitchers pint, quart, gallon sizes
- Scales ounce/GMS, kg / Pound
- Thermometers for meat doneness, candy, deep-fat
- Measuring spoons

4.3.4.2 Straining

Sieves and strainers are mainly used to aerate and help remove any large impurities from large ingredients. They are also used to puree or drain cooked or raw foods.

- Food Mill used to puree soft foods

- Drum Sieve for sifting
- Chinios for straining and / or pureeing
- Colander
- Cheese cloth

4.3.5 Pots, Pans and Moulds

Copper, cast iron and stainless steel are used. Non stick pans as well.

- Choose a size appropriate to the food being cooked
- Choose material appropriate to cooking technique
- Use proper handling and cleaning and storing techniques

4.3.5.1 Pots and Pans for Stop Over Cooking

- Stock Pot
- Saucepan
- Sauté pan
- Rondeau
- Omelet / crepe pan
- Bain Marie
- Griddle
- Steamer
- Woks

4.3.5.2 Pots and Pans for Oven Cooking

They are of the same material as for stop over cooking and may also be glazed or unglazed earthen ware, glass and ceramic

- Roasting pans
- Sheet pans
- Pate moulds
- Terrine Moulds
- Gratin Dish

- Soufflé dish
- Timbales
- Specialty like savarin , dariole etc

4.3.6 Large Equipments

Safety precautions, proper maintenance and consistent cleaning are required to keep these functioning properly and to prevent injury and accidents

4.3.6.1 Grinding, Slicing and Pureeing Equipment's

- Meat grinder
- Buffalo choppers
- Food processors
- Slicers
- Mandolin cutter
- Tilting pans
- Steamers

4.3.6.2 Stoves, Ranges and Ovens

- Open burner ranges
- Flat top ranges. Thick Plates of cast iron steel set over the heat source
- Convection oven- hot air circulated to cook food evenly. Some have the facility to introduce moisture.
- Conventional / Deck ovens
- Pizza Ovens
- Salamanders

4.3.6.3 Refrigeration Equipment

- Walk ins/ deep freezer
- Reach in
- On site or refrigerated table top
- Display refrigeration.

4.4 Safety Precautions while Handling Equipments

Employers have the primary responsibility for protecting the safety and health of their workers. Employees are responsible for following the safe work practices of their employers.

- Before operating any machinery workers should:
- Get trained in their use.
- Wear any personal protective equipment provided by your employer.
- Use any machine guarding provided.
- Always ask for help if you are not sure how to do something.
- Be aware that age restrictions exist for workers under the age of 18 from using or cleaning certain equipment.
- Follow the manufacturer's instructions for machine use and cleaning.

4.4.1 Mincers, Choppers, Dicers and Slicers



Fig 4.2

- Always use push sticks or tamps to feed or remove food from these types of machines.
- Do not use your hands to feed smaller pieces of meat through slicers.
- Make sure you are using any machine guarding that is provided to prevent access to cutter blades. Do not bypass safety guards.
- Do not open up or put your hands into an operating machine to stir contents or guide food.
- Turn off and unplug the machine before disassembling and cleaning
- Do not attempt to remove items (for example, a spoon that falls into the mixture) from dough while the machine is mixing.

- Do not open up the lids of processors to stir contents while food is processing.
- Make sure the processor is off before opening the lid or adding items.
- Turn off and unplug machinery before cleaning or removing a blockage.
- Use any machine guards provided.

4.4.2 Food Processors, Mixers

- Do not wear loose clothing or jewelry that could become caught in machinery.



Fig 4.3 Mixer with machine guarding

4.4.3 Microwaves



Fig 4.4

- Make sure the microwave is located at approximately waist level and within easy reach, to provide for ease in the lifting of hot foods.

- Follow manufacturer's instructions for operating microwave ovens.
- Cover foods cooked in microwaves to avoid splattering.
- Use caution when opening tightly covered containers. Open containers away from your face because they may be under pressure and could be extremely hot.
- Use appropriate personal protective equipment such as hot pads when removing foods from microwave.
- Make sure door seals are in good condition and free from food or grease buildup.
- Do not use a microwave if it has a door that is damaged or doesn't lock properly. Damaged ovens may emit harmful radiation.
- Do not microwave metals, foil, or whole eggs.
- Keep the interior of the microwave clean to avoid splattering and popping.
- If you notice any sparking inside the microwave, immediately turn off the microwave, unplug it, report it to the supervisor, and do not use it.
- Be advised that microwaves may interfere with the workings of pacemakers.
- Be aware that food cooked in the microwave can remain hot long after the microwave turns off.

4.4.4 Steamer

- Do not open the door while the steamer is on, shut off the steam, and then wait a couple of minutes before releasing the pressure and opening.
- Clear the area around the steamer before opening.
- Open the steamer door by standing to the side, keeping the door between you and the open steamer.
- Use oven mitts to remove hot trays from the steamer.
- Place hot, dripping steamer trays on a cart to transport. If trays are carried by hand, they will drip on floors and create a slip hazard.
- If a steamer is stacked, remove the tray from the top steamer first, then the lower one, to prevent burns from rising steam.

4.4.5 Pressure Cookers



Fig 4.5

- Shut off the steam supply and wait for the pressure to equalize before opening the lid of the pressure cooker.
- Stand to the side and open the pressure cooker away from yourself, keeping the open lid between you and the pressure cooker.

4.4.6 Coffee Makers



Fig 4.6

- Do not place hot coffee makers close to the edge of counters where people passing by may come in contact with them.
- Check to make sure the coffee filter is in place before making any coffee.
- Do not remove the filter before the coffee has stopped dripping.
- Never stick your fingers into the chamber of a coffee grinder to get beans to drop into the grinder; tapping on the outside of the container will encourage beans to drop into grinder.

4.5 Procedure for Manual Dishwashing

Cleaning: It means removing visible soil and dirt.

Sanitizing: It means killing disease-causing bacteria.

Two ways of killing bacteria are by *heat* and by *chemicals*.

The procedure to be followed during manual dish washing:

- Scrape and rinse-The purpose of this step is to keep the wash water cleaner longer.
- Wash-Use warm water at 110°F to 43°C to 49°C and a good detergent. Scrub well with a brush to remove all traces of soil and grease.

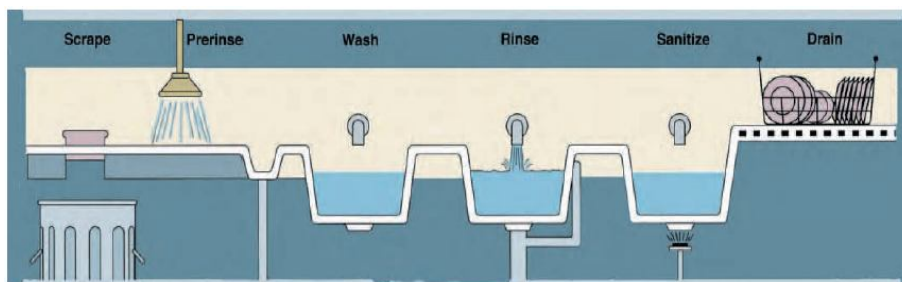


Fig 4.7 Setup of three-compartment sink for manual dishwashing

- Rinse-Use clean, warm water to rinse off detergent. Change the water frequently, or use running water with an overflow.
- Sanitize-Place utensils in a rack and immerse in hot water at 77°C for 30 seconds. (A gas or electric heating element is needed to hold water at this temperature).
- Drain and air dry-Do not towel dry. This may re-contaminate utensils. Do not touch food contact surfaces of sanitized dishes, glasses, and silverware.

Conclusion

It is necessary to maintain the code of proper usage of equipment, to avoid accidents during operations. Accidental spilling of water or oil could make the floor slippery and cause accidents.

A chef has to have an eye for detail and good observation. Anything that could be a potential cause for an accident should be addressed immediately.

Key Terms

Boning Knife	Paring knife	Carborundum
Rotatory peelers	Parsienne scooper	Kitchen fork
Palette knife	Whips	Offset spatulas
scrappers	skimmers	spiders
slotted spoons	rolling pins	cutting boards
Food Mill	Drum Sieve	Chinios
Colander	Cheese cloth	Stock Pot
Saucepan	Sauté pan	Rondeau
Omelet / crepe pan	Bain Marie	Griddle
Steamer	Woks	Roasting pans
Sheet pans	Pate moulds	Terrine Moulds
Gratin Dish	Soufflé dish	Timbales
Buffalo choppers	Food processors	Slicers
Mandolin cutter	Tilting pans	Steamers

Summary

A kitchen has use for a lot of equipment, for different purposes. The equipment has to be used judiciously and care has to be taken to ensure that the machinery is well maintained. The equipment can be categorized as hand held tools, tools for sharpening, small tools, small equipment for measuring and straining. Pots and pans are the next set of equipment used in the kitchen, which could be used for stop over cooking and for oven cooking. Large equipments are used in kitchens for grinding, slicing, pureeing, etc... Stoves, ranges, ovens and refrigeration equipment are used regularly at hotels too. All these equipment have to be used with care, if misused they can cause accidents.

Questions

1. List the tools that can be classified as Hand tools.
2. List equipment used for heavy duty grinding, Pureeing.
3. Elaborate on display refrigeration.
4. What is the procedure for manual dishwashing?

5. List the precautions to be taken when using Miners, choppers, dicers and slicers.

Test your understanding – I

1. What are the points to be considered before purchasing equipment for the kitchen?
2. Broadly classify kitchen equipment.
3. Name the tools used for sharpening.

Test your Understanding – II

1. List any 5 small tools.
2. List pots and pans used for stop over cooking
3. What are the various equipment used for refrigeration.

Test your understanding – III

1. What are the precautions to be taken while handling equipment?
2. List the do's and don'ts of working on a steamer, microwave.

UNIT

5

Aims and Objectives of Cooking**Structure**

- 5.0 Introduction
- 5.1 Aims & objectives of cooking
- 5.2 Methods of cooking
- 5.3 Various methods of cooking

Learning Objectives

At the end of the chapter, the student will be able to

- List the aims and objectives of cooking
- Explain the methods of cooking
- Differentiate between the various methods of cooking.

Chapter Preview

This chapter deals with the aims and objectives of cooking, its advantages and the different methods of cooking and its effect on the raw material. The raw material used in kitchens can be categorized as carbohydrates, sugars proteins and also micro-nutrients. Cooking has different methods by dry heat, moist

heat, convection, convention on direct flame etc. Every method when used on a raw food gives different results and the taste, flavor, texture of the final product changes. It adds variety to the final dish.

5.0 Introduction

Food derives taste and flavor after being cooked. Cooking improves the aesthetic appeal, texture and makes the food digestible. Raw food is rich in nutrients and provides energy to the human body, but a few foods require to be cooked to make it fit for human consumption.

Cooking helps in bringing about physical and chemical changes to the raw material. Ever since fire was discovered it has been used by pre-historic humans to cook food. Cooking has its origins as early as the discovery of fire. As studied earlier cooking has been converted into an art by chefs today. It is not just taste but also the visual appeal that is looked into.

Food connoisseurs like to test food by sight before they taste it. Plate presentations are appreciated. Molecular gastronomy is the new age food art.

Reservations in restaurants that offer molecular gastronomy are made years in advance in like the 'Fat Duck restaurant'.

5.1 Aims and Objectives of Cooking

- The aim of cooking is to see that the food cooked undergoes a physical change, sometimes a chemical change and is acceptable. The object of cooking is to achieve certain results such as:
- To facilitate and hasten digestion, so that the cooked food is absorbed by the digestive system and subsequently assimilated by the body. This is largely determined in the manner the food is cooked.
- During the cooking process, it breaks down the cellulose in plant food, softens some of the connective tissues of meat, breaks down and gets starch released. The alteration is brought about in texture by physical and chemical changes thus assisting mastication.
- A physical change occurs when a substance changes its form, colour or size, but still remains that same substance, like water that changes to ice. A chemical change occurs when changes its form, colour, size, combining so as to form an entirely new body, e.g. milk changes to curd.

5.1.1 Effect of Cooking

The three chief constituents of food-

- A. Protein
- B. Carbohydrates
- C. Fats

Shows effects of cooking & is visible in their increased digestibility.

5.1.1.1 Protein

The protein of meat (myosin), Egg (Albumen), wheat (Gluten), pulse (Legumin) is coagulated by heat. Avoid high temperatures as the protein hardens, denatures and shrinks and the food becomes indigestible. The connective tissue is converted into gelatin which is soluble in water and rendered digestible. The connective tissue is converted into gelatin which is soluble in water and rendered digestible. The proteins biological value is improved by moderate heating.

5.1.1.2 Carbohydrates

Starch

Starch in food is greatly affected by heat. By moist heat, it is converted first into a soluble form and then by extreme heat into a new substance, sweetish in flavour-dextrin as in the crust of bread. Moist heat causes the starch grains to swell; it gelatinizes at a temperature below boiling point of water, the degree of heat varying with the kind of starchy food.

Cellulose

Cellulose is softened by the application of moist heat.

Sugar

Sugar when heated in water dissolves, then colors, upon further heating, turns brown and becomes a caramel and emits a lovely flavor, but does not crystallize. Moderate heat does not cause much loss of mineral salts and vitamins except vitamin C.

5.1.1.3 Fats

If heated to a very high degree for a long time, fats undergo partial decomposition and fatty acids and glycerol are produced. Glycerol further decomposes to Acetic Acid which is an irritating compound to the digestive system.

Cooking pleases the eye and is receptive to the palate and helps to stimulate the digestive juices, thereby creating an appetite. On application of heat, the red coloring matter such as hemoglobin in meat decomposes and changes the red colour to brown. Flavours are developed, which stimulate the digestive juices. The colors of the vegetables are brightened. Green vegetables fast boiled without a lid improve the green colour. Cauliflower when boiled in acidic medium gets a white refreshed look.

Cooking sterilizes the food partially. Cooked food can be stored for a longer time and it prevents food poisoning and diseases when stored properly. Some of the diseases producing germs are killed by cooking. A temperature of 60° C (140° F) applied over 30 or more minutes, kills most of pathogenic germs. However, there are some spore germs which are not destroyed at a high temperature. High temperature penetrates to the centre of interior of food, especially in mutton, pork and beef.

Cooking retains, as far as possible, the nutritive and flavouring ingredients. The flavour depends upon the amount and kind of extractives present, and the acids developed. Nutritive value is enhanced if the fat proportion in the meat is more. While cooking, the nutrition could be preserved by using the cooking liquor.

Cooking gives a variety to the menu, as one food item could be cooked in various ways and given different textures, e.g mutton in a soup, roast joint, croquettes, stews, steaks, keema, sookha meat, boti kebabs etc. different methods of cooking when used, make the menu interesting and enhance variety. It is, therefore, easier to plan balanced diet.

Cooking preserves food for a longer time. The high temperature destroys bacteria and limits spoilage. It is economical as the cooked left over could be utilized and interesting new dishes could be prepared.

5.2 Methods of Cooking

5.2.1 Cooking Techniques

Methods of Heat Transfer.

Heat can be transferred by three methods

- Conduction
- Convection
- Radiation

5.2.1.1 Conduction

Is the passage of heat through a solid or one solid to another provided they are in contact – pot on a hot plate. Some materials retain heat better than others. Copper for example, heats up very quickly and evenly but does not retain heat well. Stainless steel, iron, pyrex and ceramic cookware on the other hand, retain heat well. Heat conduction includes shallow frying, sautéing and stir frying.

5.2.1.2 Convection

It involves the transfer of heat in liquids and gases. In heating liquids or gases, convection currents are produced which distributes the heat. For example when water is heated in a saucepan, the water at the bottom is heated first. It rises to the top because it is lighter and the heavier cold water takes its place at the bottom of the pan.

5.2.1.3 Radiation

It is the passage of heat in straight rays from a hot object. Any object in the path of the rays becomes hot e.g. gas and electric grills.

5.3 Various Methods of Cooking

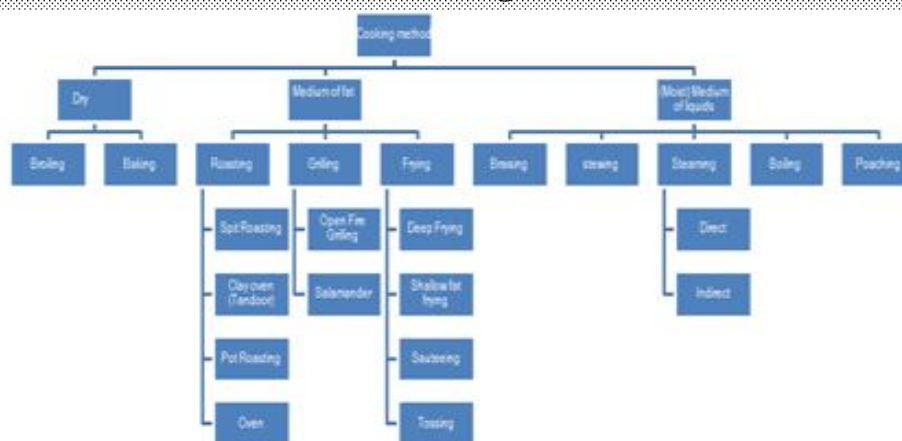


Fig 5.1

5.3.1 Cooking With Dry Heat

Cooking with dry heat includes broiling and baking; but, whichever of these processes is used, the principle is practically the same. In these processes the food is cooked by being exposed to the source of heat or by being placed in a closed oven and subjected to heated air. When dry heat is applied, the food to be cooked is heated to a much greater temperature than when moist heat is used.

5.3.1.1 Broiling

The cooking process known as broiling consists in exposing directly to the source of heat the food that is to be cooked; that is, in cooking it over or before a clear bed of coals or a gas flame. The aim in broiling is to retain the juices of food and develop flavor. As it is a quick method, foods that are not tender, as, for example, tough meats, should not be broiled, because broiling does not help to render their fibers more tender. In applying this cooking process, which is particularly suitable for tender portions of meat and for young fowl, the food should be exposed to intense heat at first in order to sear all surfaces quickly and thus retain the juices. At the beginning of the cooking, the article that is being broiled should be turned often; then, as soon as the outside is browned, the heat should be reduced if possible, as with a gas stove, and the article allowed to cook until done. If the broiling is done over coals, it is necessary to continue the turning during the entire process. While broiling produces an especially good flavor in the foods to which it is applied, provided they are not tough, it is not the most economical way of cooking.

5.3.1.2 Baking

By baking is meant cooking in a heated oven at temperatures ranging from 149 to 232 degree centigrade. As the term baking is frequently used in a wrong sense, the actual conditions of the process should be thoroughly understood. In both broiling and the original method of roasting, the heat is applied directly; that is, the food is exposed directly to the source of heat. Actual baking differs from these processes in that it is done in a closed oven or by means of heated air.

5.3.2 Cooking With Hot Fat

Of the three mediums of conveying heat to food, namely, hot air, hot water, and hot fat, that of hot fat renders food the least digestible. Much of this difficulty, however, can be overcome if an effort is made to secure as little absorption of the fat as possible. If the ingredients of the food are properly mixed before applying the fat and if the fat is at the right temperature, good results can be obtained by the various methods of cooking with hot fat, which are frying, sauteing, and fricasseeing.

5.3.2.1 Roasting

Roasting is the technique of cooking meat, poultry, or fish with dry heat. A high heat is used to sear the roast, forming a crisp skin on fish and poultry and an attractive brown crust on meats. After cooking, the roast must rest for at least 15 minutes to allow the juices that have fled to the center to be reabsorbed into the flesh. This resting period also facilitates carving. A very old method of cooking,

roasting was originally done on a rotating spit over an open fire. Now, of course, oven roasting is much commoner.

Roasting is ideal for poultry, especially fatty birds such as duck or goose, which benefit from a long cooking time to drain as much fat as possible from under the skin. (Leaner birds, on the other hand, such as quail, pheasant, and guinea hen, are often barded with strips of fat to keep their flesh from drying out during cooking). The best meats for roasting are the tender, well marbled, and more expensive cuts, such as beef file and rack of lamb; very dry cuts or those that contain a great deal of connective tissue or gristle (such as shoulders or shanks) should be saved for the moist heat of braises or stews.

Meats and poultry are often trussed, both to provide a uniform shape for even cooking and to make an attractive table presentation. This is particularly useful if the meat has been boned and crucial if it has been stuffed.

Choose a roasting pan that is just slightly larger than the food to be cooked. If the pan is too small, the roast will stew in the pan juices; too large, and you risk burning the pan juices and ruining your sauce. Setting the roast on top of bones or vegetables in the pan will further discourage the meat from stewing, and will flavor the pan juices as well. Make sure your oven is well preheated and allow the roast to come to room temperature before cooking so that it will cook evenly.

5.3.2.2 Grilling

Grilling is a form of cooking that involves direct heat. Devices that grill are called grills. There are two methods to grill food over a gas, wood or charcoal fire - direct or indirect cooking. Using the direct heat method, the food item is placed directly over the flame or coals. This method exposes the food item to very hot temperatures, often in excess of 500F. This is the fastest way to cook food items on a grill. The food items are cooked by the flames and infrared heat coming from the heat source of the grill. The direct heat method is used for grilling steaks, hamburgers, hot dogs, sausage, pork chops and skewers. The food items must be carefully monitored and turned frequently so as to not burn them.

Using indirect heat, you place the food item so that it is not directly over flames or coals. This is done by having the fire or coals on only one section of the grill and placing the food item on a part of the cooking grill opposite the flames or coals - for example, having the burners going on the right side of a gas grill but off on the left side or placing the coals on the right side of the grill and no coals on the left side. In a charcoal grill, when indirect grilling it is best to place a foil pan of water under the food to keep it from drying out. Using the indirect

grilling method is best for large cuts of meat or bone-in poultry. It allows the food to cook all the way through without burning or charring on the outside of the meat.

5.3.2.3 Sauteing and Deglazing

Sauteing is the technique of browning foods quickly over high heat in a small amount of hot fat. When sauteing, it is important that

- (1) The fat be very hot so that the food browns well and doesn't absorb fat;
- (2) The pan be low sided and large enough to hold the food without crowding so that the food browns quickly rather than stewing in its own juices; and
- (3) The food to be cooked be completely dry to prevent it from stewing (this last is particularly a consideration when sauteing foods that have been marinated).

In the recipe above for Escalopes de Veau Vallee d'Auge the veal is sauteed until completely cooked. Often, however, foods are sauteed just to brown the exterior, then finished in a simmering liquid, as in a saute (Poulet Saute Basquaise) or stews and braises (Estouffade de Boeuf Provencale).

The sauce for the veal is made by deglazing – a useful technique by which a liquid is added to the pan to pick up the flavorful meat juices that have cooked onto the bottom. Deglazing is a basic step in the preparation of a variety of sauces and, depending on the desired result, may be accomplished with water, stock, cream or an alcohol. A simple sauce for a roast can be made by deglazing the pan with water (Gigot d'Agneau).

5.3.3 Cooking With Moist Heat

5.3.3.1 Braising

Cooking meat in an oven in a closed pan with a small quantity of water constitutes braising. This cooking process might be called a combination of stewing and baking, but when it is properly carried out, the meat is placed on a rack so as to be raised above the water, in which may be placed sliced vegetables. In this process the meat actually cooks in the flavored steam that surrounds it in the hot pan. The so-called double roasting pans are in fact braising pans when they are properly used. A pot roast is the result of a modification of the braising method.

5.3.3.2 Simmering Or Stewing

The cooking process known as simmering, or stewing, is a modification of boiling. By this method, food is cooked in water at a temperature below the boiling point, or anywhere from 185 to 200 degrees Fahrenheit. Water at the simmering point always moves gently—never rapidly as it does in boiling. Less heat and consequently less fuel are required to cook foods in this way, unless, of course, the time consumed in cooking the food at a low temperature is much greater than that consumed in cooking it more rapidly.

5.3.3.3 Steaming

As its name implies, steaming is the cooking of food by the application of steam. In this cooking process, the food is put into a steamer, which is a cooking utensil that consists of a vessel with a perforated bottom placed over the one containing water. As the water boils, steam rises and cooks the food in the upper, or perforated, vessel. Steamers are sometimes arranged with a number of perforated vessels, one on top of the other. Such a steamer permits of the cooking of several foods at the same time without the need of additional fuel, because a different food may be placed in each vessel.

5.3.3.4 Boiling

As applied to cooking, boiling means cooking foods in boiling water. Water boils when its temperature is raised by heat to what is commonly termed its boiling point. This varies with the atmospheric pressure, but at sea level, under ordinary conditions, it is always 212 degrees Fahrenheit. When the atmospheric pressure on the surface of the water is lessened, boiling takes place at a lower temperature than that mentioned, and in extremely high altitudes the boiling point is so lowered that to cook certain foods by means of boiling water is difficult. As the water heats in the process of boiling, tiny bubbles appear on the bottom of the vessel in which it is contained and rise to the surface. Then, gradually, the bubbles increase in size until large ones form, rise rapidly, and break, thus producing constant agitation of the water.

5.3.4 Rechauffe

Rechauffe' means to reheat. Frequently many cooks come across a few left-overs in their kitchens. In the interest of economy, a sound knowledge of the left-over food is necessary. These left-overs should be used in some form or the other. Many tasty and interesting dishes can be prepared, but care should be taken that the food is thoroughly and carefully reheated. It is also important that only sound food is used. If the meat is over cooked, it will toughen the fibers and harden the proteins thus making food indigestible and unpalatable. Meat and

fish lose some of their nourishing components in cooking and this loss could be supplemented by other food. In addition to these points, the importance of suitable seasonings and flavorings and suitable accompaniments adds and supplements any deficiency in food value, and also determines the success and value of rechauffe dish.

Conclusion

Cooking causes many physical and chemical changes in food. These changes have to be well understood for any kitchen staff. The result of such changes gives a chef different ways to experiment with raw materials and create new dishes. These dishes can be innovative in nature and nutritive too. Hence it is necessary for a chef to understand what would the result be when a particular method is employed.

Delicate materials require delicate methods of cooking and tough materials require tough methods of cooking. Therefore, when the right method is employed it goes a long way in improving the resulting final product.

Key Terms

Conduction	Convection	Radiation
Broiling	Baking	Roasting
Grilling	Sauteing	Deglazing
Braising	Simmering	Stewing
Steaming	Boiling	Rechauffe

Summary

This chapter discusses the aims of cooking and its objectives too. Cooking changes the raw material physically and chemically, at times. It has different effects on the components of food, namely protein, carbohydrates, fats, vitamins, minerals and other micronutrients. Cooking can be used as a tool to improve the aesthetic appeal of food, sterilize it, and help retain nutrients and flavor, add variety to the menu and also preserve it for longer.

There are various methods of cooking, via conduction, convection and radiation. The different methods are cooking using dry heat namely broiling, baking; cooking with hot fat namely roasting, grilling, sauteing and deglazing; cooking with moist heat namely, braising, simmering/stewing, steaming and boiling.

Reheating or rechauffe, though not a direct method of cooking can be used for final cooking and finishing of a product, or can be used for heating food

before service. Food should always be served at right temperatures to enhance its flavors and improve the aroma.

Questions

1. How are carbohydrates affected by cooking?
2. Describe the changes in fats due to excess heating?
3. What is the principle behind using radiation for cooking?
4. Differentiate between broiling and baking.
5. What is roasting, how is it different from sautéing?
6. Differentiate between simmering and steaming.
7. What is the meaning of rechauffe?

Test your understanding – I

1. What are the aims of cooking?
2. Describe the various techniques used in cooking.

Test your understanding – II

1. Draw a chart detailing the methods of cooking.
2. Explain the concept of Cooking using dry heat.
3. Explain
 - a. Broiling
 - b. Baking

Test your understanding – III

1. Explain between the methods of cooking with dry heat and moist heat.
2. Explain cooking with hot fat.

Stocks

Structure

- 6.0 Introduction
- 6.1 Definition:
- 6.2 Preparation of stock
- 6.3 Basic ingredients in stock preparation
- 6.4 Usage of stocks
- 6.5 Different types of stocks used in cookery

Learning Objectives

- Duplicate the procedure of stock preparation
- List the major ingredients used in stocks
- Memorize the stocks used in cookery

Chapter Preview

The concept of using stocks is French and used primarily in continental dishes. The procedure for making stock, though very simple involves a lot of skill. A stock can be ruined if not made in the right way. The ingredients used for

making stocks vary from one type to another. Stocks need to be prepared by gentle simmering and not boiling. Boiling causes stocks to turn cloudy and lose its original color.

6.0 Introduction

The kitchen has to be well equipped for operations with ingredients in either cooked or semi cooked stage. The mise-en-place, required for kitchen is plenty. Stocks, sauces etc... required as a part of a main dish in the menu are to be prepared in advance and used later. Stocks are one of the many things required in various cuisines. They can be used to impart color, flavor to a dish and incorporate moisture. Stocks can be used in place of water for adding nutritional value to the dish and also impart aroma.

The stocks can be of different types and are used accordingly. Many stocks use excess vegetable trimmings and meat scraps that might otherwise end up in the compost pile or garbage. Good quality purchased stocks are expensive in comparison and the less quality stocks can't compare to the fresh. Saving trimmings for stock is good for the budget and for the environment too.

6.1 Definition

Stocks are thin liquids flavored by soluble extracts of meat, poultry, fish and vegetables. It is a liquid in which meat or meat bones, fish or fish bones and various vegetables have been cooked to extract flavor. 'Fonds de cuisine' is a kitchen stock.

Stocks are nutritious, strongly flavored liquids. They are important foundation liquids that they are used in the preparation of various dishes such as soups, sauces, gravies, stews, curries, braising, rice and cold dishes. The preparation of stocks, call for understanding, care and discerning taste. Long, slow simmering of food and cold water used for stock (except for fish stock) is required to draw out the flavor – and nutrients into the liquids. After cooking is properly stored for a day it ripens and gives a fuller flavor. To improve taste of Indian curries, pulaos etc, it is important that stocks to be used.

6.2 Preparation of Stock

As stock is an important ingredient in various dishes, care should be taken in the preparation as follows:

- All fat should be removed from bones at the outset, as the stock becomes very greasy and becomes rancid soon.
- Marrow must be removed and put aside for use as a separate dish (marrow toast) or as garnish (petite marmite-Soup)

- Stock should only simmer. If allowed to boil, the agitation and particles of fat cause an emulsification to become milky or cloudy.
- Bouquet garni should be tied to a handle of the stock pot. Cut large pieces of vegetables and add later on, as it flavors the stock. If allowed to remain in the pot too long, the vegetables will begin to disintegrate, discoloring the stock.
- The scum should be discarded.
- For storing, the stock should be strained and liquid should be cooled. No fat should be allowed to remain on the surface, as heat is prevented from escaping and may cause the stock to turn or become sour.
- Stock could be stored in a refrigerator or cold room.
- Stocks turn cloudy, if boiled too rapidly and if a lid is used and not carefully strained and not skimmed properly.

6.2.1 Stocks form the foundation for

- | | |
|-------------------|--------------|
| 1. Soups | 4. Sauces |
| 2. Stews | 5. Gravies |
| 3. Braised dishes | 6. Cold food |

6.2.2 Few Basic Rules Commonly Prescribed for Preparing Stock

- The stock ingredients are simmered starting with cold water. This promotes the extraction of collagen, which may be sealed in by hot water.
- Stocks are simmered gently, with bubbles just breaking the surface, and not boiled. If a stock is boiled, it will be cloudy.
- Salt is usually not added to a stock, as this causes it to become too salty, since most stocks are reduced to make soups and sauces.
- Meat is added to a stock before vegetables, and the “scum” that rises to the surface is skimmed off before further ingredients are added.
- The fat can be removed after the stock is finished and cooled, as it floats, separates, and solidifies into globs within the stock, and can be removed with ease.
- Stocks can be frozen and kept indefinitely but are better fresh.

6.3 Basic Ingredients in Stock Preparation

Stock is made by simmering various ingredients in water, including some or all of the following. Stocks can be made using pressure cookers, as cooking time is reduced.

Meat

- Leftover cooked meat, such as that remaining on poultry carcasses, is often used with the bones of the bird or joint.
- Fresh meat makes a superior stock and cuts rich in connective tissue such as shin or shoulder of beef or veal are commonly recommended. They can either be used alone or added in lower proportions to the remains of cooked poultry to provide a richer and fresher-tasting stock.
- Quantities recommended are in the ratio of 1 part fresh meat to 2 parts water.
- Pork is considered unsuitable for stock in European cooking due to its greasiness – but was used in earlier periods.
- Mutton was traditionally avoided due to the difficulty of avoiding the strong tallowy taint imparted from the fat.

Bones

- Veal, beef, and chicken bones are commonly used. The flavor comes from the cartilage and connective tissue in the bones. Connective tissue has collagen in it, which gets converted into gelatin that thickens the liquid.
- Stock made from bones needs to be simmered for longer than stock made from meat. Pressure cooking methods shorten the time necessary to extract the flavor from the bones.

Mirepoix

- A combination of onions, carrots, celery, and sometimes other vegetables are used.
- Often the less desirable parts of the vegetables (such as carrot skins and celery ends) are used since they will not be eaten.

Herbs and spices

- The herbs and spices used depend on availability and local traditions.

- In classical cuisine, the use of a *bouquet garni* (or *bundle of herbs*) consisting of parsley, bay leaves, a sprig of thyme, and possibly other herbs, is common.
- This is placed in a sachet to make it easier to remove once the stock is cooked.

6.4 Usage of Stocks

Without stocks there would be no French cuisine. It is called *fonds de cuisine*, which translates literally as “Foundations of cooking”. They are a crucial element in soups, sauces, braises and stews. Good stocks are made by simmering raw meat or fish, and bones, with aromatic vegetables and herbs, peppercorns, water, and a little salt. Richly colored brown stocks, made with beef and veal, are made by first browning the meat and bones in the oven before simmering them with the remaining ingredients; brown stocks are used in brown sauces and with red meats and game. Light colored white stocks, made with veal, poultry, and fish, require no browning and have a lighter flavor suitable for the delicate flavors of poultry, fish, and vegetables.

Stocks must be simmered long enough to extract the maximum flavor from the ingredients. For a veal stock, this means at least 3.5 hours, while a chicken stock requires only 2.5 hours and a fish stock just 20 minutes. The stock must be carefully skimmed after it is brought to a boil to remove any fat and gray scum that rise to the surface, but it must never be boiled during cooking, as this would make it cloudy.

Stocks may be refrigerated for several weeks provided they are brought to a boil every 2 to 3 days. Or they may be reduced to a thick, syrup glaze, called a *glace*, that will set to a very firm consistency when chilled and may be refrigerated for several months (*glaces* are used as sauce bases or to intensify the flavor of and give body to sauces). Stocks may also be frozen for several months; it makes good sense to freeze them in small quantities so that you need thaw only the amount necessary.

6.5 Different Types of Stocks used in Cookery

- **Chicken stock** should be cooked for 3–4 hours.
- **Fish stock** is made with fish bones and finely chopped mirepoix. Fish stock should be cooked for 30–45 minutes—cooking any longer spoils the flavor. Concentrated fish stock is called “fish fumet.” In Japanese cooking, a fish and kelp stock called *dashi* is made by briefly (3–5 minutes) cooking skipjack tuna (bonito) flakes called *katsuobushi* in nearly boiling water.

- **Fond blanc**, or white stock, is made by using raw bones and white mirepoix. Chicken bones are the most common for fond blanc.
- **Fond brun**, or brown stock. The brown color is achieved by roasting the bones and mirepoix. This also adds a rich, full flavour. Veal bones are the most common type used in a fond brun. Tomato paste is often added (sometimes thinned tomato paste is painted onto the roasting bones). The acid in the paste helps break down the connective tissue helping accelerating the formation of gelatin, as well as giving color to the stock.
- **Glacé viande** is stock made from bones, usually from veal, that is highly concentrated by reduction.
- **Ham stock**, common in Cajun cooking, is made from ham hocks.
- **Jus** is a rich, lightly reduced stock used as a sauce for roasted meats. Many of these are started by deglazing the roasting pan, then reducing to achieve the rich flavour desired.
- **Lamb stock** should be cooked for 5 hours. To make a lamb jus, start with a chicken stock and roasted lamb necks and bones.
- Master stock is a special Chinese stock used primarily for poaching meats, flavoured with soy sauce, sugar, ginger, garlic, and other aromatics.
- **Prawn stock** is made from boiling prawn shells. It is used in Southeast Asian dishes such as laksa.
- **Veal stock** should be cooked for 8 hours.
- **Vegetable stock** is made only of vegetables.

Conclusion

It becomes evident that stocks are integral to French and other continental cuisines. Any kitchen is well equipped with stocks for cooking. The right stock can add a lot of variety to the dish. Stocks when thickened by other agents can be used as sauces.

Stocks can be used to moisturize a dry preparation. Stock making, requires a skilled hand and continuous monitoring. Many a times stocks are to be reduced to half to capture the essence of the primary ingredient, such as fish, bones etc...

Today, ready-made stock and stock cubes consisting of dried, compressed stock ingredients are readily available. These are commonly known as bouillon

cubes, as cooking base in the US, or as Oxo cubes in Britain, after a common brand of stock cube sold there.

Key Terms

Fonds de cuisine

Emulsification

Bouquet garni

Scum

Summary

Stocks are an essential ingredient in the French cuisine. Any restaurant serving French or continental cuisines are essentially in need of stock for most of their preparations. The reason for using stock varies from dish to dish. Most often stocks are used to lend moisture, flavor, aroma and also color to the final product.

Stocks can be made in large quantities and frozen for several months at a time. This saves preparation time, as it could be for as long as 2 to 3 hours of gentle simmering.

Questions

1. How is stock prepared? Explain the procedure of making vegetable stock.
2. What are the basic rules of making stock?
3. List the basic ingredients used in stock making.
4. What are the different types of stocks? Explain fond blanc in detail.
5. What are the ingredients of lamb stock?

Test your understanding – I

1. Define stock.
2. What is a stock and how is it used?

Test your Understanding – II

1. Describe the procedure of stock making.
2. Stocks are a foundation for _____, _____, _____, _____ and _____.

Test your Understanding – III

1. List and explain the different uses of stocks.

UNIT

7

Sauces**Structure**

- 7.0 Introduction
- 7.1 Définition
- 7.2 Importance of Sauces in Food Preparation
- 7.3 Thickening Agents
- 7.4 Classification of Sauces
- 7.5 Tips for Making a Goodsauce
- 7.6 Sauces used in different Cuisines

Learning Objectives

At the end of the chapter, the student will be able to

- Define sauces and name the common mother sauces
- List all the thickening agents used in sauce making
- Classify sauces based on their main ingredient

7.1 Chapter Preview

This chapter discusses the importance of sauces and the method of their preparation. Like stocks, sauces have their own importance in lending finishing touches to the dish. A variety of thickening agents are used to make these sauce and they impart a unique touch to the sauce.

A sauce is the crowning glory of any dish. From the basic “five mother” sauces, there are literally hundreds of variations of sauce that are used to dress, compliment, enhance and bring out the flavor of the food it is served with.

The French are credited with refining the sophisticated art of sauce-making. The development of various sauces over the years stems from the 19th-century French chef Antonin Carême who evolved an intricate methodology by which hundreds of sauces were classified under one of five “mother sauces.” Those basic sauces are the white sauce **Béchamel**, the light stock-based **Velouté**, the brown stock-based **Espagnole**; the two basic emulsified sauces, **Hollandaise** and **Mayonnaise**; and the oil and vinegar-based **Vinaigrette**.

Tomato is also considered to be among the 5 mother sauces; now a days

7.0 Introduction

Sauces are the next most important part of the French & continental cuisine. These sauces can be derived from stocks by using different thickening agents. Sauces are capable of adding variety to the dishes by imparting color, flavor, texture and even drama to a great extent.

Sauces are of different types. They vary by way of the basic ingredient used, color and consistency. These sauces are integral for plate presentations and add to the overall improvement of the product.

A sauce is liquid, creamy or semi-solid food served on or used in preparing other foods. Sauces are not normally consumed alone; they add flavor, moisture, and visual appeal to the final dish. *Sauce* is a French word taken from the Latin *salsus*, meaning *salted*. Possibly the oldest sauce recorded is garum, the fish sauce used by the Ancient Romans.

Sauces may be used for savory dishes or for desserts. They can be prepared and served cold, like mayonnaise, prepared cold but served lukewarm like pesto, or can be cooked like béchamel and served warm or again cooked and served cold like apple sauce. Some sauces are industrial inventions like Worcestershire sauce, HP sauce, or nowadays mostly bought ready-made like soy

sauce or ketchup, other are still freshly prepared by the cook. Sauces for salads are called salad dressing. Sauces made by deglazing a pan are called pan sauces.

A cook who specializes in making sauces is a saucier.

7.1 Definition

Sauces are liquid or semi liquid mixtures. A keen sense of smell, delicate sense of taste, a light, strong hand for blending – all contribute to the perfect sauce. Long ago, Grimande de la Royere, philosopher and gastronome wrote “The sauce is to culinary art, what grammar is to language”. A perfect sauce has a colorful appearance, is glowing in its rich smoothness, its texture is that of velvet, and it has a definite taste. It has natural flavor and complements the food it accompanies, rather than mask its taste.

7.2 Importance of Sauces in Food Preparation

- Enhances flavor.
- Some sauces help in digestion, e.g. mint sauce, apple sauce with roast pork.
- It gives moistness to the food, e.g. white sauce adds creaminess to firm and dry food.
- Adds colour to the food. Hollandaise sauce served on a vegetable adds colour. Tomato sauce goes with Fish a l’orly.
- Served as an accompaniment, sometimes gives a contrast taste to another food, e.g. cranberry sauce with roast turkey.
- Sometimes gives the name to the dish. E.g. Madeira wine when added to brown sauce it is called Sauce Madeira.
- Enhances nutritional value of the dish.
- Dress and complements food that need some additional quality and makes the food more palatable.
- Gives tartness and contrast or balances a bland food.

7.3 Thickening Agents

These are different ingredients added to give the thick consistency to a sauce. The different agents make each sauce unique by way of its taste, color, consistency & flavor.

7.3.1 Roux

It is a fat and flour mixture, which are cooked together. It is cooked to various degrees, namely white, blond or brown. Equal quantities of flour and butter and margarine are taken to prepare the different colored roux. The colour acquired depends upon the degree of cooking of the flour and the colour of the sauce depends upon the liquid and roux used.

While preparing the sauce, boiling liquid should never be added to a hot roux as it may become lumpy, a cold liquid to a hot roux or hot liquid to an old roux may be added to get smooth texture.

7.3.2 Starch

Arrowroot, corn flour, fecule (potato starch), tapioca are used to thicken the sauce. A paste should be made of cold liquid and starch and then stirred into boiling liquid and allowed to boil, till the starch is cooked. It gelatinizes at 93°C. Starch contains no gluten and gives a clear sauce and thickens more as it cools.

7.3.3 Beurre Maine

It is chiefly used for fish sauces. Equal quantities of flour and butter are kneaded, and very little quantity is added at a time to the boiling liquid and stirred well to form a smooth consistency.

7.3.4 Yolks of Eggs and Cream

It is a liaison, added as a finishing agent at the end of cooking. The product is never boiled, when the liaison is added, or it would curdle. The liaison is added to thicken delicate cream or veloute sauces or cream soups. Yolks of eggs are used to prepare mayonnaise by emulsifying with oil.

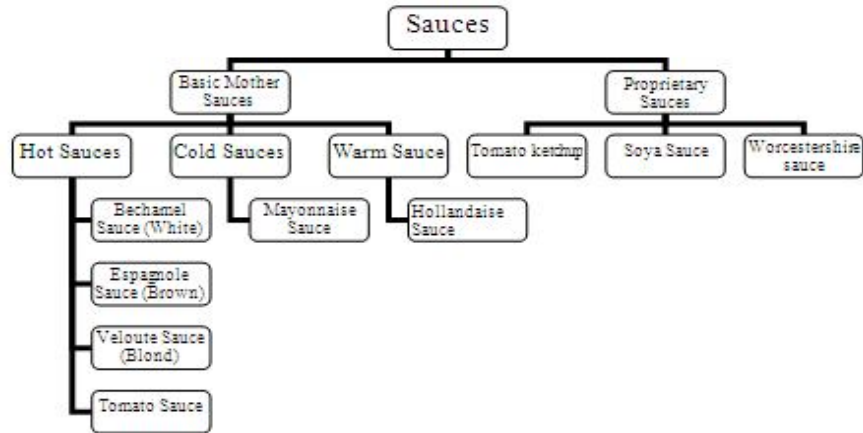
7.3.5 Blood

It is usually used for game cooking. It thickens the sauce and gives a particular flavor e.g. preparation of Jugged Hare.

Sauces could be grouped as follows:

- Basic sauces
- Cold Basic Sauces
- Butter Sauces
- Others sauces (miscellaneous)

7.4 Classification of Sauces



7.4.1 Bechamel

Thickening milk with a white roux and simmering it with aromatics makes this white sauce. It should be creamy, smooth and lustrous.

7.4.2 Espagnole or Brown Sauce

This is made by sweating the mirepoix and adding the tomato puree till lightly caramelized. The brown roux is added to this and the brown veal stock is thoroughly incorporated into it. It should be simmered and skimmed throughout cooking. Then it should be strained and kept for later use.

7.4.3 Demi - Glace

This is a highly flavored glossy sauce. It literally translates, as “half glace”, a demi glace of excellent quality will have several characteristics. It should have a full, rich flavor. The aromatics should not be overpowering; it should have a deep brown color, be translucent and glossy when correctly reduced. It should be of nappe consistency.

7.4.4 Veloute

Thickening a white stock with an appropriate amount of pale roux, then stirring it until it is completely cooked out makes this ivory colored, lustrous sauce. It should be smooth and thick enough to nappe.

7.4.5 Tomato Sauce

There are several approaches for making a tomato sauce. It should have a deep, rich, tomato flavor, with no trace of acidity and bitterness. There should be only hints of supporting flavors from stocks, aromatics and pork fats, when used.

This sauce is coarser than any other of the grand sauces because of the degree of texture that remains even after cooking and at times pureeing the tomatoes.

7.4.6 Mayonnaise

A simple mayonnaise is the foundation for a number of sauces. Mayonnaise is very easy to make if one follows a few rules. First, have all the ingredients at room temperature before begin. Add the oil very slowly, drop by drop, at the beginning until the sauce begins to emulsify; then add the remainder in a steady stream without risk of breaking the mayonnaise. If the sauce does separate, whisk in teaspoon mustard in a warm, dry bowl until creamy (mustard helps to emulsify the sauce). Then gradually whisk in the remaining mayonnaise.

7.4.7 Hollandaise

This is an emulsion sauce where melted and clarified butter is suspended in partially cooked egg yolks. It is fragile because it is not a true mixture. It should not be held directly near heat, or else it will break. The sauces flavor when correctly made will be buttery. The egg yolks and reduction ingredients (vinegar and peppercorns) give the sauce a balanced taste. It should be pale lemon in color.

Hollandaise and its variations are opaque, but the sauce should have a luster and not appear oily. They should have a smooth texture. A grainy texture indicates over cooking of the egg yolks. It should have light consistency and at times almost appears frothy.

Some problems occur during the process

Curdled appearance – if the sauce develops this, it may mean the addition of butter is too rapid for the egg yolks to absorb it. It should be whipped till it appears smooth and then proceed.

Scrambling of egg yolks – this happens if the sauce gets overheated. It should immediately be removed from the heat and allowed to cool. If it doesn't correct, you may need to start afresh.

7.5 Tips for Making a Good Sauce

Constantly stir roux-thickened sauces when cooking to prevent lumps.

- If a roux-thickened sauce develops a few lumps, beat them out with a rotary beater or wire whisk or strain sauce with a sieve to remove lumps.
- Cook egg-thickened sauces over low heat, or cook these sauces in the top of a double boiler over hot, not boiling, water. Always temper (warm)

the egg yolks before adding them to the sauce by first stirring in a little of the hot sauce mixture into them. Then add to the remainder of the sauce mixture. Never let a sauce boil after the egg yolks are added as the sauce may curdle.

- Ensure that the water doesn't touch the bottom of the pan holding the sauce.

7.6 Sauces used in Different Cuisines

- Sauces used in traditional Japanese cuisine are usually based on *shōyu* (soy sauce)

- *Miso* or *dashi*. *Ponzu*, citrus-flavored soy sauce, and *yakitori no tare*, sweetened rich soy sauce, are examples of shoyu-based sauces.
- Miso-based sauces include *gomamiso*, miso with ground sesame, and *amamiso*, sweetened miso.
- In modern Japanese cuisine, the word “sauce” often refers to Worcestershire sauce, introduced in the 19th century and modified to suit Japanese tastes.
- Tonkatsu, okonomiyaki, and yakisoba sauces are based on this sauce.
Japanese horseradish or wasabi sauce is used on sushi and sashimi or mixed with soy sauce to make wasabi-joyu.

- Some sauces in Chinese cuisine are soy sauce, doubanjiang, hoisin sauce, sweet bean sauce, chili sauces, oyster sauce, and sweet and sour sauce.
- Korean cuisine uses sauces such as doenjang, gochujang, samjang, and soy sauce.
- Southeast Asian cuisines, such as Thai and Vietnamese cuisine, often use fish sauce, made from fermented fish.
- Indian cuisine uses sauces such as tomato-based curry sauces, tamarind sauce, coconut milk/paste based sauces, and chutneys.
- Salsas (“sauces” in Spanish) such as pico de gallo (salsa tricolor), salsa cocida, salsa verde, and salsa roja are a crucial part of many Latino cuisines in the Americas and Europe.

- Typical ingredients include tomato, onion, and spices; thicker sauces often contain avocado.
- Mexican cuisine uses a sauce based on chocolate and chillies known as mole. Argentine cooking uses more Italian-derived sauces, such as tomato sauce, cream sauce, or pink sauce (the two mixed).
- Peruvian cuisine uses sauces based mostly in different varieties of *aji* combined with several ingredients most notably salsa huancaína based on fresh cheese and salsa de ocapa based on peanuts or nuts. It is said that each household in the country has its own secret salsa recipe.

Conclusion

The method for preparing the various types of sauces incorporates some of the same techniques. For example, a **roux** is basic to many of the white and brown sauces. This cooked mixture of flour and fat (usually butter) is an important contribution to the sauce-making art. In addition, these classic sauces have been joined by a plethora of modern-day sauces such as sweet dessert sauces, tomato, pesto and barbecue sauces, as well as a wide variety of gravies.

It should be remembered that when a sauce is used on a food, it is the first thing to touch the tongue. A sauce is only as good as the ingredients put into it and the care taken while preparing it.

Key Terms

Roux	Beurre Maine	Béchamel
Espagnole	Veloute	Demi – Glace
Mayonnaise	Hollandaise	

Summary

Sauces are essential in continental cookery, they add visual appeal, moisture, taste and an element of suspense to the final dish – meat, fish, eggs, vegetables – making it more palatable. The basic mother sauces are Mayonnaise, hollandaise, béchamel, veloute, espagnole and tomato. Hundreds of derivatives can be made from these mother sauces by addition of other ingredients. The student should memorize atleast 10 derivative sauces of each mother sauce.

Questions

1. How are sauces used to enhance food preparations?
2. What do you understand by roux, how is it used?

3. Explain
 - a. Beurre maine
 - b. Blood
4. What is Espagnole, how is it made?
5. What are the tips for making a good sauce?
6. List any 5 international sauces.

Soups

Structure

- 8.0 Introduction
- 8.1 Definition
- 8.2 Classification of soup
- 8.3 Special points for the service & preparation
- 8.4 Commonly used garnishes for soups
- 8.5 Convenience soups

Learning Objectives

At the end of the chapter, the student will be able to

- Classify soups
- List commonly used ingredients used as garnishes for soups.

Chapter Preview

Soups form the second course in the French classical menu and are very important. They are nutritious tasty and are capable of giving good health. They can be of different types based on the major ingredients and its consistency. The

kitchens of restaurants prepare soups and hand over to the steward for guest service. The old philosophy – ‘Hot soups to be served piping hot and cold soups to be served cold’, should be followed by all the staff.

Chefs can create magic by serving the soups in the right bowls and by the addition of proper garnishes. These garnishes are capable of adding a lot of visual appeal to the soup. For example croutons – when added to tomato soups introduce a different texture and also break the monotony created by adding a different color.

In any case the taste cannot be compromised, any dish is first relished by the eyes of the connoisseur and later tasted, which does not suggest that only visual appeal matters.

8.0 Introduction

Soups are a generally warm food made by combining ingredients such as meat and vegetables with stock, juice, water, or another liquid. Hot soups are characterized by boiling solid ingredients in liquids in a pot until the flavors are extracted, forming a broth. Traditionally, soups are classified into two main groups: *clear soups* and *thick soups*. The established French classifications of clear soups are *bouillon* and *consommé*. Thick soups are classified depending upon the type of thickening agent used: *purées* are vegetable soups thickened with starch; *bisques* are made from puréed shellfish or vegetables thickened with *cream*; cream soups may be thickened with béchamel sauce; and *veloutés* are thickened with eggs, butter, and cream. Other ingredients commonly used to thicken soups and broths include rice, lentils, flour, and grains; many popular soups also include carrots and potatoes.

8.1 Definition

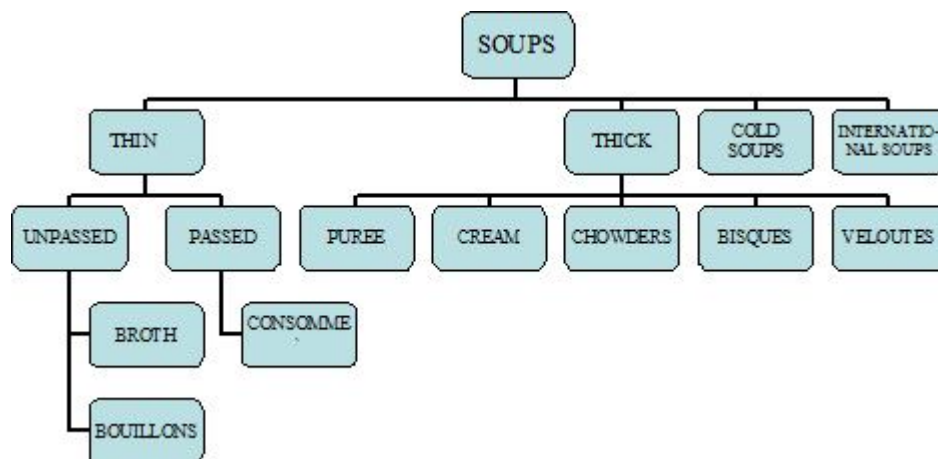
It is probable that a soup in its earliest form was a complete meal because it was found hearty, nourishing, economical and wholesome. Soup is a liquid food consisting of meat, seafood, vegetables cereals or poultry.



Fig 8.1

They play an important role on the menu and are regarded as appetizers as they stimulate the appetite for the heavier food to follow. On the menu, they are served as the first course, if hors d'oeuvre are not being served. If hors d'oeuvre is served then soup is served as the second course.

8.2 Classification of Soup



8.2.1 Broths

The term broth and bouillon can be used interchangeably. Broths are among the simplest soups to prepare. Normally, their flavor comes from long simmering of a variety of ingredients together in one pot. An assortment of separately cooked foods may be added at various times during cooking requirements of the individual items. All the ingredients should finish cooking at the same time.

8.2.2 Consome

This is concentrated, thin, clear soup made from meat, poultry or fish. The word has the same origin as consummate, meaning to bring to completion or to perfection. A consommé is cooked long enough for most of the ingredients to be extracted into the liquid. In the most general sense, consommé is a meat, poultry or fish stock, which has gone through a special clarification process, served hot or cold.

8.2.3 Purees

They are slightly thicker than cream soups & are somewhat coarser in texture. They are normally based on dried peas, lentils or starchy vegetables, such as potatoes & carrots.

8.2.4 Cream Soups

Cream soups are based on béchamel sauces.

8.2.5 Chowders

Thick soup resembling a stew made with meat or fish and vegetables, often flavored with cheese.

8.2.6 Bisque

These are traditionally based on such crustaceans such as shrimp, lobster & crayfish. These share characteristics with both purees & cream soups.

8.2.7 Veloute

A veloute is based on a light veloute sauce, a sauce thickened with roux & finished with a liaison of egg yolk & cream.

8.2.8 Vegetable Soups

Any soup containing one or more vegetables, cut in dice, brunoise, julienne, chiffonade or paysanne and eaten with the liquid they have flavored, is classified as vegetable soup or potage.

8.2.9 Cold Soups

This is a special category because this grouping of soups is served differently from any other: Well chilled, in chilled cups or bowls. The popularity of the cold soup has recently increased. Many soups that are prepared to be hot soup can be changed into a cold soup by simply chilling them well and making minor alterations to the structure and flavor. For instance, many purees can be served chilled if they are made with little or no butter, and thinned with cream after chilling.



Fig 8.2

8.2.10 International Soups

Gazpacho	-	Spain
Mulligatawny	-	Sri Lanka
Chicken Broth	-	England
Cockie Leekie	-	Scotland
Clam Chowder	-	U.S.A
Bortsch	-	Russia
Beersoup	-	Germany
French Onion Soup	-	France
Minestrone	-	Italian.

8.3 Special Points for the Service and Preparation

- First-class, clean, strong and flavourful stock should be used, as it would help in producing good quality soup.
- If there is a heavy entrée, the soup should be thin or light.
- If heavy soup is served, the portion should be small.
- The soups should not in any way be filling or consist of food particles that require much chewing
- Garnish should be small and dainty, so that they can be picked up easily by soup-spoon.
- Soups should be always moderately seasoned.
- Serve hot soups; piping hot, and cold soups; very cold.
- A little sugar should be added to tone the acidity of the soup, before mixing cream as it prevents curdling.
- Consommé should be amber in colour (onions halved and browned on hot plate are added to the soup for colour)
- Accompaniments of the soups should be of a crisp character, e.g. Melba toast, various crackers, bread sticks, cheese croutons, bread rolls etc.
- Entrée portions of one liter of soup yields five portions.

8.4 Commonly used Garnishes for Soups

- Croutons : Dices or other shapes made from bread, toast, pastry
- Profit roles : Prepared from choux paste, they are miniature cream puffs which may be filled or used plain
- Cereals : Rice or barley
- Cheese : Cheese balls or grated parmesan cheese served with croutons on one side.
- Cream : Unsweetened whipped cream or sour cream
- Meat : Usually small dices or juliennes.
- Poultry : Same as meat
- Seafood : Diced or flaked. Large enough pieces distinguishable.
- Pastas : Noodles, spaghetti other pasta products such as star letters cornets etc.
- Vegetables : Cut in various sizes, shapes – juliennes, round slices, dices of sprig, printaniere vegetables.

8.5 Convenience Soups

These are marketed in dried, liquid or frozen form. They are available in many varieties. The soups are sold in cans or bottles, some in ready to use forms, others in concentrated forms. These liquid soups can be classed as deluxe e.g. turtle, kangaroo's tail, oxtail etc.

Conclusion

Commercial soup has become popular with the invention of canning, today a great variety of canned and dried soups are on the market. Canned soup can be condensed, in which case it is prepared by adding water (or sometimes milk), or it can be "ready-to-eat," meaning that no additional liquid is needed before eating.

In terms of Western-style cuisine, vegetable, chicken base, potato, pasta and cheese soups are also available in dry mix form, ready to be served by adding hot water and sometimes fresh ingredients such as meat or vegetables.

Key Terms

Broths	Consomme	Purees
Cream soups	Chowders	Bisque
Veloute		

Summary

Soups have a place of importance in the French classical menu. Soups can be served individually or with accompaniments. Normally, all the continental soups are served with any form of bread, namely bread rolls or bread sticks.

Soups are broadly classified as broths, consommés, purees, cream soups, chowders, bisque, veloute, vegetable soups and cold soups. A few soups require cooking and a few don't.

There are a lot of soups which have achieved fame for their country and are popularly known as international soups. For eg: Mulligatawny, Cock-a-leekie, Minestrone etc...

Soups are healthy, for instance, folklore says the best cure for cold/flu is the 'chicken soup'. A few soups are attributed with special powers that are they are capable remedies for many maladies.

Questions

1. Explain chowders and broths, highlight their differences.
2. What are cold soups?
3. List any 10 international soups and their country of origin.
4. What are the points to be kept in mind for service and preparation of soups.
5. What are the common garnishes used during the service of soups. List and 10.

UNIT

9

**Fruits and Vegetables
Cookery****Structure**

9.0 Introduction

9.1 Fruits

9.2 Vegetables

Learning Objectives

At the end of the chapter, the student will be able to

- Name the different types of fruits and vegetables
- Classify the fruits and vegetables
- Recall and explain the cuts of vegetables.

Chapter Preview

Cooking of Fruits and vegetables has their own rules to be followed for retention of color, flavor, texture and nutrients. If not cooked properly the final dish could lose its appeal and nutrition. Color, its retention is essential, for instance peas when cooked should have the rich green color as when raw, the possibilities of color loss is high when the correct cooking method is not employed. Fruit are

classified for the sake of convenience and their preservation techniques are discussed in the chapter.

Vegetables are common in every meal, they have their own classification as per the part of the tree/plant/shrub they originate from. Vegetables are rich in color (pigments) and nutrients, cooking should be done carefully to retain them.

A variety of cuts are employed for vegetables as per their usage in a dish, ginger can be cut into juliennes for garnish, grated or finely chopped for other cooking purposes. Similarly other vegetables can also be cut in different shapes for ease of cooking and also for ensuring maximum utilization of the vegetable, avoiding wastage. The various cuts of vegetables are discussed along with the approximate dimensions.

9.0 Introduction

Cooking is incomplete without fruits and vegetables. A variety of fruits are available in India. We have the king of fruits – the Mango, which is the pride of our nation. Apart from mangoes and their varieties a lot of different fruits are available here, such as apples, grapes, the humble bananas etc. Fruits can be had uncooked and cooked too, they form a major component of desserts in continental cookery. Today we are able to have access to a lot of exotic fruits too, which otherwise were not available in India, like – kiwi fruits, mangosteins, star fruit etc.



Fig 9.1

Vegetables are an integral part of cookery, for both vegetarians and non-vegetarians. No meal is complete without a vegetable be it Indian or continental. Vegetables add color to the menu, and also fibre for the body.

Vegetables and fruits provide a lot of nutrition to the body. ‘An apple a day keeps the doctor away’ is a well known adage. A poor man’s apple – the banana is a power packed fruit, which give valuable micro-nutrients to all.

9.1 Fruits

9.1.1 Classification of Fruits

Fruits can be divided into the following groups:

Tree and Stone Fruits: Include all apples, apricots, cherries, peaches, pears, plums, etc.

Citrus Fruits : Include grapefruits, lemons, limes, mandarins, oranges, etc.

Soft Fruits and Berries: Include blackberries, blackcurrants, blueberries, gooseberries, mulberries, raspberries, redcurrants, strawberries, etc.

Exotic Fruits: Include bananas, cranberries, dates, figs, grapes, guavas, kiwi fruit, lychees, mangoes, mangosteens, melons, papayas, passion fruits, pineapples, pomegranates, rambutans, and star fruits.

9.1.2 Cooking of Fruits

Preparing and Pureeing Fruit: Fruit purees and sauces make appetizing additions to desserts and even savory dishes. For purees and some sauces, place the fruit in a roomy saucepan over gentle heat so it cooks evenly. Stir constantly then either mash the fruit with a fork and sieve or whizz in a blender. For coulis (usually made with soft or stone fruits), the fruit can often just be mashed or blended in a food processor and then sieved before serving

Other Methods of Cooking Fruits: Boiling is too fierce for delicate fruits, but gentle simmering preserves their texture. For soft and stone fruits, the fruit should simply be warmed through in the liquid. Poach fruit in a single layer so the heat can reach all the pieces evenly - use a deep frying pan rather than a saucepan.

Fruit poaches well in most liquids, from plain water to dense sugar syrup to. A standard method for poaching is to bring the liquid to a simmer then gently place the fruit in with a spoon. Reduce the heat immediately so the liquid is barely bubbling, and cook until tender. Stewing is a similar method, often using a covered saucepan and just enough liquid to cover the fruit and keep it moist.

The fierce heat from a grill or barbecue concentrates the sugars and can cause the fruit to blacken before it's cooked through, so you'll need to keep an eye on it - but the results can be a revelation. Thread small pieces of evenly sized fruit on to skewers to stop them falling through the barbecue rack or grill large slices of fruit such as pineapple or mango.

9.1.3 Preserving Fruits

Fruit can be made into jams, jellies, pickles and chutneys, or can be bottled whole. The most suitable method of preserving depends on the type of fruit and its quality and ripeness. Under-ripe fruit is fine for chutneys, jams and jellies but over-ripe fruit is only good for making chutney and shouldn't be used for making jam.

Drying is also a delicious way of preserving fruits and intensifies their flavours and most fruits can be dried effectively.

9.2 Vegetables

9.2.1 Definition

Vegetables can be defined as anything, which is of plant origin. Vegetables are plants used as foods. They include all fruits, nuts and cereals, which are of plant origin but not commonly classified as vegetables. Various parts of a plant include of water, protein, vitamin, mineral and carbohydrate which is chiefly in the form of starch. We eat vegetables because it is undoubtedly the best way to restore all the nutrients. We eat cooked vegetables for their taste, input of fiber, variation, tradition etc.

9.2.2 Commonly Used Vegetables

Vegetables which are commonly used in India are:

Carrots, potatoes, French beans, onions, cabbage, ginger, garlic, cauliflower, etc.

The vegetables used in European countries include: Broccoli, asparagus, mushrooms, pimentos, artichoke, celery, etc

9.2.3 Classification of Vegetables

A plant has many edible parts. Each of these edible parts (vegetables) is classified into eight categories. They are as follows:

Leaves: Cabbage, spinach, mustard greens, lettuce, coriander leaves, mint.

Seeds : Beans, peas, lentils, corn, maize, wheat, rice, barley

Roots : Beet, carrot, sweet potato, turnip, radish

Tubers : Artichoke (Jerusalem), potato (Irish), yam, tapioca

Bulbs : Onions, garlic, leeks, shallots, spring onions.

Flowers : Cauliflower, broccoli, globe artichokes

Fruits : Tomato, cucumber, pumpkin, gourd, squash, aubergines, okra

Stems and Shoots : Asparagus, celery, kohlrabi, bamboo shoots, plantain stems, lotus stems.

9.2.4 Preparation of Vegetables












Basic Cuts and Shapes

Cutting food products into uniform shapes and sizes is important for two reasons:

- It ensures even cooking.
- It enhances the appearance of the product.

The following terms describe cutting techniques:

Chop	to cut into irregularly shaped pieces.
Concasser (con-cass-say)	to chop coarsely
Mince	to chop into very fine pieces
Emincer (em-man-say)	to cut into very thin slices (does not mean “to mince”)
Shred	to cut into thin strips, either with the coarse blade of a grater (manual or power) or with a chef’s knife

	Tourné: 2 in. long × ¾ in. diameter, with 7 sides, and flat-ended.		Rondelle: round or bias-round cuts, varied diameter or thickness.
	Large dice: ¾ in. × ¾ in. × ¾ in. (2 cm × 2 cm × 2 cm).		Paysanne: ½ in. × ½ in. × ½ in. (round, square, or rectangular).
	Medium dice: ½ in. × ½ in. × ½ in. (12 mm × 12 mm × 12 mm).		Batonnet: ¼ in. × ¼ in. × 2½–3 in. (6 mm × 6 mm × 8–7.5 mm).
	Small dice: ¼ in. × ¼ in. × ¼ in. (6 mm × 6 mm × 6 mm).		Julienne: ⅛ in. × ⅛ in. × 2½ in. (3 mm × 3 mm × 6 mm).
	Brunoise: ⅛ in. × ⅛ in. × ⅛ in. (3 mm × 3 mm × 3 mm).		Fine julienne: 2 in. long × ¼ in. × ¼ in.
	Fine brunoise: ⅛ in. × ⅛ in. × ⅛ in.		

9.2.5 Colors and Pigments present in Vegetables

Preferably a vegetable must be served having its natural color. It will determine the degree of acceptance or rejection by the customer. Vegetables are colored by pigments that come in four colors.

Color	Pigment
White	Flavones
Red	Anthocyanines
Green	Chlorophyll
Orange	Carotenoids

9.2.6 Cooking of Vegetables

Reasons, care and precautions to be observed while cooking vegetables

Do not overcook vegetables, as they tend to lose their nutritive value.

Cook close to service time so they can be served piping hot and there is no need to re heat them as reheating destroys color, flavor, texture and nutritive value.

Cook greens in open containers for the volatile acids to escape; hence it helps in retention of color. Add salt while blanching vegetables, as this would increase the boiling point of water and cook the vegetables faster.

Rules to be followed in vegetable cookery to retain color and nutrients:

- Always wash greens and then chop.
- Always cook greens in open container to retain color.
- Blanching enhances the color of vegetables if cooked till the right degree.
- Cook red and white color in acid medium.
- Cook green and orange in neutral medium.
- Do not overcook vegetables.
- Do not reheat cooked vegetables.

9.2.7 Different Methods used for Cooking Vegetables

Boiling and Steaming

The merit of boiling vegetables in a lot of water lies in its speed. A large volume of boiling water will heat the vegetables through very quickly & the faster the vegetable cooks the more of its color, texture & flavor remains. (This is especially true for fragile green vegetables such as green peas & broccoli)

Boiling in less water takes longer & diminishes flavor & texture, but the method is defended on nutritional grounds. Vegetables lose slightly less vitamins when they are boiled in a small amount of liquid. However, large quantities of vegetables boiled in little liquid may not cook evenly; the parts in contact with the pan may soften & discolor before the rest cooks through.

Blanching

This step is important for several reasons - to make skins easy to remove, to eliminate or reduce strong odors or flavor, to “set” the color of vegetable to be served cold, or as the first step in other cooking techniques.

Steaming

This is an efficient and practical way to prepare vegetables for ala minute service, specially, those that are naturally tender or thin, or have been cut into small, uniform pieces. This is one of the gentle cooking techniques of vegetables. It may be steamed in a pan or in an electrical steamer.

Roasting/Baking

This is best for vegetables with a thick skin like brinjal or squash. Often this is a preliminary step followed by other cooking methods. Sweet bell peppers etc. to be used in a puree are cooked this way to have the skin removed easily. It also gives a distinct “roasted” flavor. Potatoes are often baked whole.

Sauteing/Stir Frying

Some vegetables like mushrooms, squash and onions are sautéed and stir fried from their raw state, while denser ones like green beans, broccoli need to be partially cooked prior to this.

Frying

Almost any vegetable can be sautéed or deep-fried, from thinly sliced asparagus to golden-brown cakes of shredded potatoes. From bread crumbed croquettes to fragile spinach leaves coated with a light, crisp batter.

Braises and Stews

Vegetable braises, or stews are cooked slowly in a relatively small amount of liquid. Unlike boiling, where the aim is to cook vegetables as rapidly as possible to conserve their flavor and texture, braising requires slow cooking because the object is to mingle the flavors of the ingredients. The left over braising liquid is most often reduced and plays a vital role in the making of the sauce accompanying it.

Grilling

Some vegetables are grilled from the raw state whereas some require preliminary cooking or marinating in an oil-based bath to ensure cooking.

Conclusion

Fruits and vegetables are an essential part of a meal in any cuisine and will always be important. Cooking techniques should be used intelligently to enhance the best flavors, colors and textures. They can be used in conjugation with milk products, fish, meat and poultry, as they supplement the protein content by providing carbohydrates, fibres and other nutrients.

The variety of colors in vegetables enhances the visual appeal of the finished product and also makes it appetizing for the person eating it. The more the color on a plate in a meal the more healthy the meal is. Chefs today try to improve the variety available in the menu by experimenting with different combinations of raw material to create new ones by using fruits and vegetables.

Key Terms

Tubers	Bulbs	Tourné
Large dice	Brunoise	Rondelle
Paysanne	Batonnet	Julienne
Flavones	Anthocyanines	Carotenoids
Blanch	Saute	Braise

Summary

The most nutritive part of the meal has always been vegetables and fruits. Fruits are rich in Vitamins, minerals and fiber. One or two helpings of fruit everyday help improve the digestive system and encourage the secretion of necessary juices in the digestive system. Fruits are best had fresh, but at times it becomes impossible to consume fruit in the raw form, at such times fruits can be had in the cooked form. Cooked fruits are equally beneficial. Fruits can be pureed for

giving it a longer shelf life or cooked by boiling, poaching, stewing or even barbecuing. Care has to be taken when doing so to avoid discoloration or loss of nutrients.

Vegetables can be classified as root, stem, leaves, tubers, seeds, bulbs, fruits, flowers or even shoots. The preparation of vegetables requires care and good handling to retain their goodness. Vegetables are cut in different ways in cooking. Some could be tiny pieces to large chunks depending on what they are being used for. Large dice, Medium dice, Small dice, Brunoise (broon-wahz), Fine brunoise, Rondelle, Paysanne, Batonnet, Julienne (or allumette potatoes), Fine julienne are a few types of cuts.

Every vegetable has its own pigmentation such as flavones, anthocyanines, chlorophyll, carotenoids and tourne.

Questions

1. Classify fruits and give 5 examples of each category.
2. What are the best ways to preserve fruits?
3. Define vegetables, name vegetables commonly found in India.
4. Give 5 examples each of (vegetables)
 - a. Bulbs
 - b. Roots
 - c. Tubers
 - d. Seeds
5. Give the basic sizes of
 - a. Large dice
 - b. Rondelle
 - c. Julienne
 - d. Brunoise
6. List the precautions to be taken to retain color and nutrients while cooking vegetables.

Cereals & Pulses

Structure

- 10.0 Introduction
- 10.1 Cereals
- 10.2 Cereals and Cereal Products
- 10.3 Pulses

Learning Objectives

At the end of the unit, the students will be able to

- List and differentiate between different cereals and explain their uses
- List pulses and differentiate between each

10.0 Introduction

Cereals are a necessary ingredient of each of our meal. Cereals are rich in carbohydrates and a vital source of energy. It can be clearly seen that rice in various forms is a staple cereal of the southern part of India and wheat and wheat products constitute a larger part of meal of north Indians. Due to better connectivity and good crop produce these borders have been reduced and consumption of both cereals has become common all over the country.

Pulses are also commonly used all over the country as a rich source of dietary protein, especially for vegetarians. Plenty of varieties of pulses are available in the market and it is not uncommon to see 'chole' being cooked in South India, even though it is a signature north Indian (Punjabi) dish.

Unit Preview

The unit outlines the major cereals used in cooking. Rice and wheat are not the only cereals, jowar, bajra etc. too are cereals. Each cereal is explained in short for understanding the properties it possesses and the use.

The pulses are also outlined in short with a list of pulses used almost all over the world.

10.1 Cereals

Cereal crops or grains are mostly grasses cultivated for their edible grains or seeds. Cereal grains are grown in greater quantities and provide more energy worldwide than any other type of crop; they are therefore staple crops. They are also a rich source of carbohydrate. In some developing nations, grain constitutes practically the entire diet of poor people. In developed nations, cereal consumption is more moderate but still substantial. Cereals are generally of the gramineous family and, refer to crops harvested for dry grain only. Maize, wheat and rice, amongst them, accounted for 87% of all grain production worldwide and 43% of all food calories in 2003. Cereal grains supply most of their food energy as starch. Whole grains are good sources of dietary fiber, essential fatty acids, and other important nutrients.

10.2 Cereals and Cereal Products

- Rice
- Wheat
- Barley
- Maize
- Rye
- Oats
- Millets
- Sorghum
- Buckwheat

10.2.1 Rice

Rice is a staple for a large part of the world's human population, especially in East, South and Southeast Asia, making it the most consumed cereal grain. Rice can be grown practically anywhere, even on steep hillsides. China and India are the top two producers of rice.

The seeds of the rice plant are first milled using a rice huller to remove the chaff (the outer husks of the grain). At this point in the process the product is called brown rice. This process may be continued, removing the germ and the rest of the husk, called the bran at this point, creating white rice.

The white rice may then be buffed with glucose or talc powder (often called polished rice, though this term may also refer to white rice in general), parboiled, or processed into flour. The white rice may also be enriched by adding nutrients, especially those lost during the milling process. While the cheapest method of enriching involves adding a powdered blend of nutrients that will easily wash off, more sophisticated methods apply nutrients directly to the grain, coating the grain with a water insoluble substance which is resistant to washing.

10.2.1.1 Cooking of rice

Rice is cooked by boiling or steaming. It can be cooked in just enough water to cook it through (the absorption method), or it can be cooked in a large quantity of water which is drained before serving (the drainage method). Electric rice cookers, which are popular in Asia and Latin America, simplify the process of cooking rice. Rice may be soaked prior to cooking, which decreases cooking time. For some varieties, soaking improves the texture of the cooked rice by increasing expansion of the grains.

10.2.1.2 Parboiled Rice

In some countries, rice is commonly consumed as parboiled rice, also known as easy-cook rice. Parboiled rice is subjected to a steaming or parboiling process while still a brown rice. This causes nutrients from the outer husk to move into the grain itself. The parboil process causes a gelatinization of the starch in the grains. The grains become less brittle, and the colour of the milled grain changes from white to yellow. The rice is then dried, and can then be milled as usual or consumed as brown rice. Milled parboil rice is nutritionally superior to standard milled rice. Parboiled rice has an additional benefit in that it does not stick to the pan during cooking as happens when cooking regular white rice.

10.2.2 Wheat

Globally, it is an important human food grain ranking second in total production as a cereal crop behind maize; the third being rice. Wheat grain is a

staple food used to make flour for leavened, flat and steamed breads; cookies, cakes, pasta, noodles and couscous and for fermentation to make beer, alcohol, vodka or biofuel. Wheat is planted to a limited extent as a forage crop for livestock, and the straw can be used as fodder for livestock or as a construction material for roofing thatch. The production of wheat is so widespread that it is being harvested somewhere in the world in any given month. But wheat grows best in regions having temperate climates with rainfall between 12 and 36 inches per year. The United States ranks fourth in world wheat production, following: 1) China; 2) the Commonwealth of Independent States; and 3) the European Community (whose major producers are France, the United Kingdom and Germany). The three components known to affect the baking quality of wheat flour are: - starch, proteins, and lipids.

10.2.3 Maize

The term maize derives from the Spanish form (*maíz*) of the Arawak Native American term for the plant. However, it is commonly called corn in the United States, Canada and Australia. Corn is a shortened form of “Indian corn”, i.e. the Indian grain. Maize is widely cultivated throughout the world, and a greater weight of maize is produced each year than any other grain. While the United States produces almost half of the world’s harvest, other top producing countries are as widespread as China, Brazil, France, Indonesia, India and South Africa. Human consumption of corn and cornmeal constitutes a staple food in many regions of the world. Corn meal is made into a thick porridge in many cultures: from the polenta of Italy, to mush in the U.S. It is the main ingredient for tortillas, atole and many other dishes of Mexican food. The eating of corn on the cob varies culturally. It is common in the United States but virtually unheard of in some European countries. Sweet corn is a genetic variation that is high in sugars and low in starch that is served like a vegetable. Popcorn is kernels of certain varieties that explode when heated, forming fluffy pieces that are eaten as a snack.

10.2.4 Barley

Barley is an annual cereal grain, which serves as a major animal feed crop, with smaller amounts used for malting and in health food. It is a member of the grass family Poaceae. In 2005, barley ranked fourth in quantity produced and in area of cultivation of cereal crops in the world. Half of the world’s barley production is used as an animal feed. A large part of the remainder used for malting and is a key ingredient in beer and whiskey production. Barley must have its fibrous outer hull removed before it can be eaten. Barley grains with their hulls still on are called covered barley. Once the grain has had the inedible hull removed, it is called hulled barley. At this stage, the grain still has its bran

and germ, which are nutritious. Hulled barley is considered a whole grain, and is a popular health food. Pearl barley or pearled barley is hulled barley which has been processed further to remove the bran. It may be polished, a process known as “pearling”. Hulled or pearl barley may be processed into a variety of barley products, including flour, flakes similar to oatmeal, and grits.

10.2.5 Oat

The common oat plant is a species of cereal grain grown for its seed, which is known by the same name (usually in the plural, unlike other grains). While oats are suitable for human consumption as oatmeal and rolled oats, one of the most common uses is as livestock feed. Oats make up a large part of the diet of horses and are regularly fed to cattle as well. Oats are also used in some brands of dog and chicken feed. Oats have numerous uses in food; most commonly, they are rolled or crushed into oatmeal, or ground into fine oat flour. Oatmeal is chiefly eaten as porridge, but may also be used in a variety of baked goods, such as oatcakes, oatmeal cookies, and oat bread (in which it is generally combined with wheat flour). Oats are also an ingredient in many cold cereals, in particular muesli and granola. Oats may also be consumed raw, and cookies with raw oats are becoming popular. Oats are also occasionally used in Britain for brewing beer. Oats are generally considered “healthy”, or a health food, being touted commercially as nutritious.

10.2.6 Rye

Rye is a grass grown extensively as a grain and forage crop. It is a member of the wheat tribe and is closely related to barley and wheat. Rye grain is used for flour, rye bread, rye beer, some whiskies, some vodkas, and animal fodder. It can also be eaten whole, either as boiled rye berries, or by being rolled, similar to rolled oats. Rye is a cereal and should not be confused with Ryegrass which is used for lawns, pasture, and hay for livestock. Rye is grown primarily in Eastern, Central and Northern Europe. Rye bread, including pumpernickel, is a widely eaten food in Northern and Eastern Europe. Rye is also used to make the familiar crisp bread. Rye flour has lower gluten content than wheat flour, and contains a higher proportion of soluble fiber.

10.2.7 Millet

The millets are a group of small-seeded species of cereal crops or grains, widely grown around the world for food and fodder. Millets are principally food sources in arid and semi-arid regions of the world. In Western India, millet flour (called “Bajari” in Marathi) has been commonly used with “Jowar” (Sorghum) flour for hundreds of years to make the local staple flat bread (called “Bhakri”). Millets are traditionally important grains used in brewing millet beer in some

cultures. The protein content in millet is very close to that of wheat; both provide about 11% protein by weight. Millets are rich in B vitamins, especially niacin. Millets contain no gluten, so they cannot rise for bread.

10.2.8 Sorghum

Sorghum is a member of species of grasses, some of which are raised for grain and many of which are utilized as fodder plants either cultivated or as part of pasture. The plants are cultivated in warmer climates worldwide. Numerous *Sorghum* species are used for food (as grain and in sorghum syrup or “sorghum molasses”), fodder, and the production of alcoholic beverages. *Sorghum* species are an important food crop in Africa, Central America, and South Asia and is the “fifth most important cereal crop grown in the world”.

10.3 Pulses

Pulses are defined as annual leguminous crops yielding from one to twelve grains or seeds of variable size, shape and color within a pod. Pulses are used for food and animal feed. The term pulses are reserved for crops harvested solely for the dry grain. This therefore excludes green beans and green peas, which are considered vegetable crops. Also excluded are crops which are mainly grown for oil extraction (oilseeds like soybeans and peanuts), and crops which are used exclusively for sowing (clovers, alfalfa). Pulses are important food crops due to their high protein and essential amino acid content. Like many leguminous crops, pulses play a key role in crop rotation due to their ability to fix nitrogen. India is both the world’s largest producer and the world’s largest importer of pulses. Canada, Myanmar, Australia and the United States are significant exporters of pulses. These are the four most significant suppliers of India’s imports, in that order. The vast majority of leguminous crops grown in the United States are soybeans, used as livestock feed and for extraction of vegetable oil, and peanuts, neither of which is considered a pulse. Pulses are 20 to 25% protein by weight, which is double the protein content of wheat and three times that of rice. For this reason, pulses are sometimes called “poor man’s meat”.

FAO (Food and Agricultural Organization) of the United Nations recognizes 11 primary pulses. All Indian dals come under the category of pulses, also referred to as lentils. Important amongst them are:

- Red kidney bean or Rajmah
- White kidney bean or Lobia
- Mung bean or Moong dal. Also known as green gram

- Black gram or Urad dal
- Chickpea or Kabuli chana/ Chhola. Also known as Garbanzo or Bengal gram.
- Pigeon pea or Arhar dal/ Toor dal.

Other pulses are Fava beans, Adzuki beans, Jack bean, Sword bean, Velvet bean, Yam bean etc.

Conclusion

There are a variety of cereals and pulses used all over the world. It has been seen that produce from different locations has a distinct taste and flavor, for instance 'basmati rice' from the northern part and 'chitti muthyal' from the southern part of the country.

Dals and pulses are used in different ways daily in each household.

Wheat is used in different ways e.g. ground wheat (flour), refined flour (maida) coarse pounded wheat (daliya), chapattis, breads, flakes, porridges can be made out of wheat. Similarly rice is also used in many ways, as a main course, and even as a dessert, the popular south Indian breakfast 'idly', 'dosa' are made from rice too, rice flour is used for making delicious pancakes too.

Other cereals are also used extensively as substitutes for rice and wheat for gaining the same type of carbohydrates and also energy.

Key Terms

Millet	Sorghum	Buckwheat	
Parboiled rice	Barley	Oat	Rye

Summary

· Summarizing all, cereals and pulses are important and consumed all over the world in some form or the other rice, wheat, barley, maize, rye, oats, millets, sorghum, buckwheat are listed as cereals. Pulses too have an exhaustive list Red kidney bean or Rajmah, white kidney bean or Lobia, mung bean or Moong dal also known as green gram, black gram or Urad dal, chickpea or Kabuli chana/ Chhola. Also known as Garbanzo or Bengal gram. pigeon pea or Arhar dal/ Toor dal, other pulses are Fava beans, Adzuki beans, Jack bean, Sword bean, Velvet bean, Yam bean etc

Questions

1. What are cereals, give 5 examples of cereals ?
2. What are the different methods of cooking rice?
3. What are pulses, name any 5 types ?
4. Find the nutritive content of
 - a. Rice
 - b. Barley
 - c. Millet
 - d. Kidney beans
 - e. Black gram
5. List all the cereals, pulses and their Regional names in Hindi & Telugu.

Test your understanding – I

1. Define cereals.
2. Why are cereals an important part of a meal, Explain?

Test your understanding – II

1. List all cereals used.
2. What are the different varieties of rice available in the market, name them.
3. Explain the growth patterns of wheat in India.

Test your understanding – III

1. Explain about
 - a. Barley
 - b. Maize
 - c. Rye

Egg Cookery

Structure

- 11.0 Introduction
- 11.1 Egg structure
- 11.2 Uses of an egg as a food ingredient
- 11.3 Nutritional value of an egg
- 11.4 Chicken egg sizes
- 11.5 Methods of cooking egg

Learning Objectives

At the end of the chapter, the student will be able to

- Describe the anatomy and nutritional value of an egg
- Recite the different egg sizes
- List and explain the different methods of cooking an egg

11.0 Introduction

Egg is a nutritious alternative source of protein to ovavagens. It is packed with a lot of protein and other energy giving nutrients. Initially eggs were treated as non-vegetarian in nature, but today science has proved that unfertilized egg can be treated as vegetarian.

Egg cookery is very vast by itself. Eggs are used for cooking, baking, poaching etc. be it in Indian style of cooking or continental, it plays a vital role. Eggs of hens, ducks, geese, quails, ostrich and emu are used frequently now-a-days.

Chapter Preview

Eggs have a distinct composition and structure; this has to be understood for cooking. Eggs are of different sizes according to the breed of the bird. Eggs can be cooked in delicious ways and are also a powerhouse of nutrients. Eggs are recommended for people in sports and also people who have a lot of physical work to do. Eggs can be boiled, poached, coddled and even used in baking, to name a few.

11.1 Egg Structure

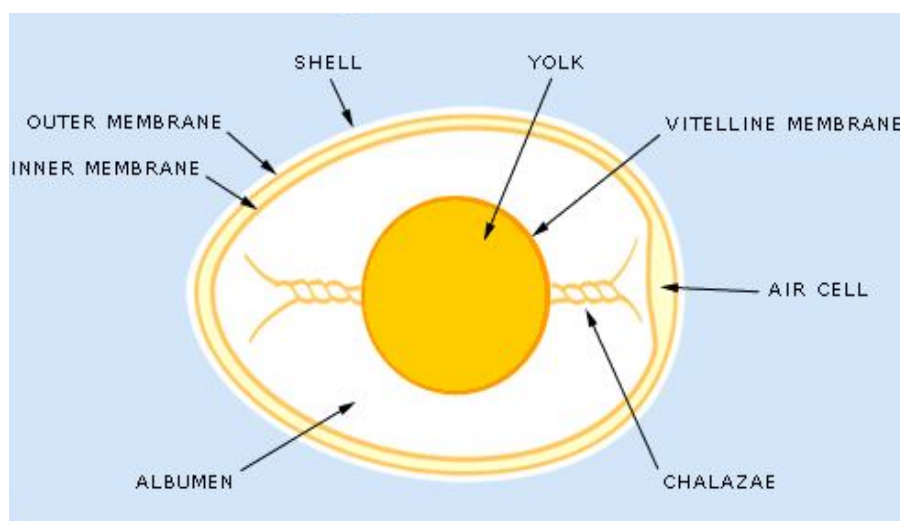


Fig. 11.1 Anatomy of Egg

11.1.1 Shell

Bumpy and grainy in texture, an eggshell is covered with as many as 17,000 tiny pores. Eggshell is made almost entirely of calcium carbonate (CaCO_3) crystals. It is a semi permeable membrane, which means that air and moisture can pass through its pores. The shell also has a thin outermost coating called the bloom or cuticle that helps keep out bacteria and dust.

11.1.2 Inner and Outer Membranes

Lying between the eggshell and egg white, these two transparent protein membranes provide efficient defense against bacterial invasion. If you give these

layers a tug, you'll find they're surprisingly strong. They're made partly of keratin, a protein that's also in human hair.

11.1.3 Air Cell

An air space forms when the contents of the egg cool and contract after the egg is laid. The air cell usually rests between the outer and inner membranes at the egg's larger end, and it accounts for the crater you often see at the end of a hard-cooked egg. The air cell grows larger as an egg ages.

11.1.4 Albumen

The egg white is known as the albumen, which comes from albus, the Latin word for "white." Four alternating layers of thick and thin albumen contain approximately 40 different proteins, the main components of the egg white in addition to water.

11.1.5 Chalazae

Opaque ropes of egg white, the chalazae hold the yolk in the center of the egg. Like little anchors, they attach the yolk's casing to the membrane lining the eggshell. The more prominent they are, the fresher the egg.

11.1.6 Vitelline Membrane

The clear casing that encloses the yolk.

11.1.7 Yolk

The yolk contains less water and more protein than the white, some fat, and most of the vitamins and minerals of the egg. These include iron, vitamin A, vitamin D, phosphorus, calcium, thiamine, and riboflavin. The yolk is also a source of lecithin, an effective emulsifier. Yolk color ranges from just a hint of yellow to a magnificent deep orange, according to the feed and breed of the hen.

11.2 Uses of an Egg as a food ingredient

Bird eggs are a common food source. The most commonly used bird eggs are those from the chicken, duck, and goose, but smaller eggs such as quail eggs are occasionally used as a gourmet ingredient, as are the largest bird eggs, from ostriches. Most commercially produced chicken eggs intended for human consumption are unfertilized, since the laying hens are kept without any roosters.



Fig. 11.2

11.3 Nutritional value of an Egg

Eggs provide a significant amount of protein to one's diet, as well as various nutrients.

Chicken eggs are the most commonly eaten eggs, and are highly nutritious. They supply a large amount of complete, high-quality protein (which contains all essential amino acids for humans), and provide significant amounts of several vitamins and minerals, including vitamin A, riboflavin, folic acid, vitamin B6, vitamin B12, choline, iron, calcium, phosphorus and potassium. They are also one of the least expensive single-food sources of complete protein. One large chicken egg contains approximately 7 grams of protein.

All of the egg's vitamin A, D and E is in the egg yolk. The egg is one of the few foods which naturally contain Vitamin D. A large yolk contains more than two-thirds of the recommended daily intake of 300 mg of cholesterol.

11.4 Chicken Egg Sizes

Chicken eggs are graded by size, for the purpose of sales. The United States Department of Agriculture grades them by weight per dozen. The following egg masses have been calculated on the basis of the USDA grades:

Modern Sizes (USA)	
Size	Mass per egg
Jumbo	Greater than 2.5 oz. or 71g
Very Large or Extra Large (XL)	Greater than 2.25 oz. or 64g
Large (L)	Greater than 2 oz. or 57g
Medium (M)	Greater than 1.75 oz. or 50g
Small (S)	Greater than 1.5 oz. or 43g
Peewee	Greater than 1.25 oz. or 35g

11.5 Methods of Cooking Egg

11.5.1 Boiled Egg

Using the term “boiled” when referring to cooking eggs in the shell can be misleading, because eggs referred to as “hard-boiled” or “soft-boiled” should never be cooked at a full boil for the entire length of the cooking time. Eggs cooked in the shell with heat that is too high or with a cooking time that is too lengthy, will become tough and rubbery and a dark line may form between the yolk and the white. Use the following cooking times as a guide for the desired firmness for the yolk of each egg size (the whites will be firm)

Size	Degree of Doneness	Time Required
Medium	Soft-cooked yolk	4 minutes
	Medium-cooked yolk	6 minutes
	Hard-cooked yolk	11 minutes
Large	Soft-cooked yolk	5 minutes
	Medium-cooked yolk	7 minutes
	Hard-cooked yolk	12 minutes
Extra Large	Soft-cooked yolk	6 minutes
	Medium-cooked yolk	8 minutes
	Hard-cooked yolk	13 minutes

11.5.2 Coddled Eggs

A coddled egg is cooked more slowly than a boiled egg, but basically yields the same results, except that the egg is a bit tenderer.

- Soft yolk: 4 to 6 minutes
- Medium yolk: 6 to 8 minutes
- Hard yolk: 20 to 25 minutes

Note : When coddling eggs, the size of the egg and its temperature at the start of the cooking process will have an effect on the cooking time. An extra large egg used directly from the refrigerator will require the full cooking time as

stated above and a medium egg that has been brought up to room temperature before cooking will require only the minimum time listed.

To stop the cooking process, run cold water over the eggs. It is best to use older eggs for coddling because they peel easier. Soft-cooked coddled eggs are often served in an egg cup and eaten directly from the shell because they are difficult to peel.

Another method used for coddling eggs involves the use of a special porcelain dish with a screw top. The egg, without the shell, is placed in the dish, the cover is screwed on, and the dish is placed in a pan of heated water. When the cooking process is complete, the dish is removed from the water and is used to serve the egg.

11.5.3 Poached Eggs

A poached egg cooked on the stovetop is one that is cooked in simmering water without the shell. Unlike a boiled or coddled egg that benefits from the use of an older egg, a poached egg is best when a very fresh egg is used. This is because the fresh egg, when placed into the heated water, will not spread out like an older egg, yielding better results with the shape and texture of the egg. If an older egg must be used, it can be simmered in the shell for a few seconds so that the white is just slightly congealed. When the egg is broken into the simmering water, it will not spread out as much. One tablespoon of vinegar added to the water will also help with coagulating the white to keep it from spreading too much.

11.5.4 Fried Eggs

Frying is another popular method of cooking eggs and it is easy to do. Butter or cooking fat is heated in the bottom of the pan. Whole eggs are cracked and opened over the pan. The eggs should be opened as close to the bottom of the pan as possible so that they maintain a pleasing shape and do not spread out too much. The eggs are cooked until the whites are firm and the yolk is runny or firm, depending on how they are desired.

There are several methods used to finish cooking the eggs. They can be left unturned and can be basted with the hot fat. A few drops of water can be added and the pan can be covered to steam cook the eggs. The eggs can also be finished by carefully turning them over using a spatula once they have firmed up on the bottom. The eggs are then cooked until the yolks are at a desired doneness, such as over easy (runny yolk), over medium (soft yolk), or over hard (firm yolk).

11.5.5 Scrambled Eggs

Eggs are beaten well & a little milk, butter & seasoning is blended into it. This is then cooked over low heat in a nonstick pan having light texture, creamy consistency.

11.5.6 Omelet

These may be the classic rolled, flat or soufflé. In soufflé omelet, unlike the other two where the yolk & whites is beaten into homogenous mixture, the yolks are beaten with the flavoring & the whites are whipped to soft peak & then folded into the yolk. This then cooked in a heavy flat pan

Conclusion

Eggs are a rich source of protein and are being used in cooking for a long time for baking as well as cooking. Both savory and sweet dishes can be made from eggs cakes, meringues are examples of sweet and scrambled eggs, omelets are common examples. They are often used as binding agents before frying, for instance the object to be fried is dipped in egg and coated with bread crumbs for binding and to get the desired texture.

Some people even have raw eggs to supplement their protein requirements.

Key Terms

Shell	Albumen	Chalazae
Vitelline	Coddled eggs	Scrambled eggs
Peewee		

Summary

Eggs have a specific structure, with a calcium rich shell and protective layers within to prevent any harm to the yolk. Eggs of different birds are used for cooking and consumption, most commonly hen eggs. The size of an egg varies with the breed of the hen or the bird in question. Jumbo, Very Large or Extra Large (XL), Large (L), Medium (M), Small (S), Peewee are chicken egg sizes.

Cooking of eggs in different ways brings out different tastes and flavors; they can be boiled, coddled, poached, fried, scrambled and made into omelet.

Questions

1. Name the different parts of an egg and describe them, with a neat diagram.
2. What is the nutritive value of an egg yolk?

3. What is the mass of Jumbo, Medium & Pee wee?
4. What is the time required for Extra large eggs to be cooked in the three degrees of doneness.
5. What is the procedure of fried eggs?
6. Give the recipe of scrambled eggs.
7. What are the different types of omelets?

Fish Cookery

Structure

- 12.0 Introduction
- 12.1 Parts of a fish
- 12.2 Fish and nutrition
- 12.3 Different methods used in cooking fish
- 12.4 Classical cuts of fish
- 12.5 Storing fish

Learning Objectives

At the end of the chapter, the student will be able to

- Draw and label parts of a fish
- Categorize types of fish
- Reproduce the nutritional value of a fish
- Explain the different methods used in fish cookery

12.0 Introduction

Fish in India is considered a vegetable in the eastern part of India, especially the Bengalis. Fish could be fresh water or sea fish, its shape size and texture

changes with the origin of the fish. Fish comes in many sizes, from small to very large; sharks and whales are also eaten and considered a delicacy. Fish eggs (roe) too are edible, and are a very expensive food.

The Japanese like to have their fish raw (sushi).

Chaper Preview

Fish wins hands down when compared to other meats, be it chicken, mutton, pork, beef, veal etc. It is high in vitamins and the meat is low in fat and cholesterol. Fish is categorized based on the shape and size, including the way the bones are in a fish. Fish meat is tender and needs to be cooked delicately to retain its original shape. The methods are explained in the chapter.

Storing fish is also a major concern as it has a tendency to spoil if not done so.

12.1 Parts of Fish

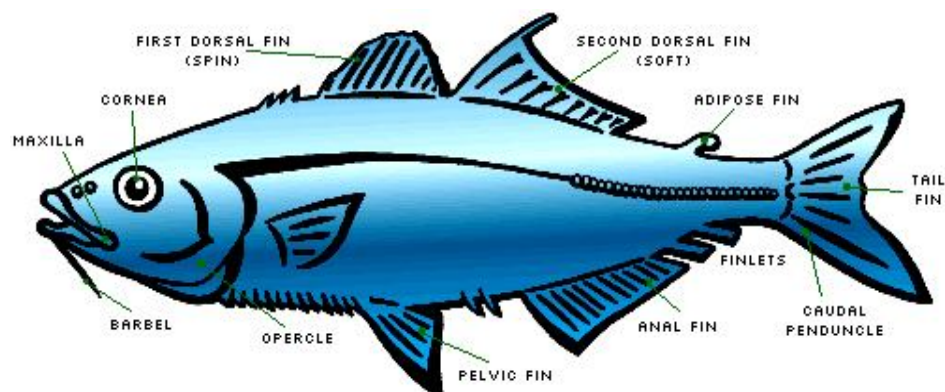


Fig. 12.1 Parts of Fish

12.1.1 Selection of Fish

The chef should select fish of the best quality. It should be rapidly transported from the source to the customer. It should smell and look fresh. The following should be kept in mind while selecting fish

- Smell – fresh, clean, with a typical aroma.
- Skin should feel slick and moist. Scales, if any, should be firmly attached.
- Fins and tails - moist, fresh flexible.
- Flesh – should be firm and elastic.

- Eyes- clear
- Gills – blood red to maroon color, moist and fresh looking.
- Check live shellfish for signs of movements as in lobsters and crabs.
- Clams, mussels and oysters should be tightly closed.
- Fish should be carefully stored – preferably it should be used as fresh as possible.

12.1.2 Categories

- Round fish such as Trout, Bass, and Salmon have backbone along the upper edge with two fillets on either side.
- Flat fish such as flounders, Dover sole, back bone runs through the center of the fish with four fillets, two upper and to lower.
- Non bony; such as skate, sharks and monk fish, which have cartilage rather than bone.
- Shell fish can be broken into
 1. Univalves – Abalone,
 2. Bivalves - such as clams, mussels, oysters, scallops.
 3. Crustaceans - lobsters, shrimps, Cray fish.
 4. Cephalopods – squid and octopus. The name translates as “head footed”; tentacles and arms attached directly to the head.

12.1.3 Caviars & Roes

Eggs of fish sturgeon, which are salted & matured, are known as Caviar. The Caspian Sea provides 98% of the world's total supply. Russia is the main supplier, however now Iran also produces about 10% of the available caviar.

The eggs are removed, washed, treated with brine, drained & packed.

- Beluga – The largest grained caviar & the most expensive, it comes from the largest Caspian sturgeons, which reach a length of 12ft. The eggs are dark Grey, firm, & well separated & are quite fragile.
- Ossetra – Smaller than the above, but with more even grains, it is golden brown in color & more oily.

- Sevruga – Comes from the smaller Sturgeon & is also one of the smallest grained Caviar. Light to dark Grey in color, it is considered to be one of the cheapest.

- Pressed Caviar – The ripest eggs are compressed. It is more strong, salty & oily.

Caviar should be kept between -2 to + 4 deg C. The right portion is 2 oz... It is accompanied by sour cream, blinis, egg white & yolk that are sieved, small dices of lemon & chopped parsley.

12.2 Fish and Nutrition

Fish plays a significant role as part of a balanced healthy diet. Fish is a good source of many of the nutrients we need throughout life from infancy through to old age.

12.2.1 Protein

Fish is a good source of protein which is essential for the body's growth and repair.

12.2.2 Fat

Whitefish contains little or no fat. Oil-rich fish contain fat which is evenly distributed throughout the flesh. Research indicates that the Omega 3 fatty acids in oil-rich fish can help lower the risk of heart disease and may be beneficial in treating rheumatoid arthritis and psoriasis.

12.2.3 Carbohydrate

Fish does not contain carbohydrate so for a balanced meal fish should be served with a carbohydrate rich food like pasta, rice, potatoes or bread.

12.2.4 Minerals

Fish is a good source of iron as well as phosphorus, iodine, fluorine and zinc. Canned fish is an excellent source of calcium.

12.2.5 Vitamins

Fish contain many of the B vitamins essential for the conversion of food to energy in the cells and also for healthy nerve tissue. Oil-rich fish are a good source of the fat soluble vitamins A and D. In fact, oil-rich fish is the best natural source of vitamin D. Vitamins A and D are essential for healthy bones.

12.3 Different Methods used in Cooking Fish

12.3.1 Braising

This method of cooking is applicable to whole fish e.g. Salmon, as well as larger cuts of fish. To braise, a fish kettle or other suitable pan, which can be tightly covered, should be used.

The base of the pan should be well buttered & lined with sliced onion; carrot & shallots previously tossed in butter. Add a few parsley stalks. Arrange the fish on top & if required stud on one side with carrots or gherkins, cut to a suitable size. Moisture added to three-quarters & braised loosely covered in the oven; so that the stock is reduced as the fish is cooked. When almost done, remove the cover & continue cooking, basting frequently to glaze the fish. Drain well & dress on a suitable dish. Cover to keep warm. Strain the liquor, skim off surplus fat reduce if necessary & add to the fish sauce. Braised fish is usually accompanied by an appropriate garnish.

12.3.2 Poaching

Butter a tray or a dish, place the seasoned fish fillets on it & moisten with fish stock and dry white wine and cover with a buttered paper and cook in a medium oven. The cooking liquor is reduced and added to the appropriate sauce.

12.3.3 Frying

For shallow or deep-frying, the oil or butter must be very hot.

12.3.4 Deep - Frying

The fish fillets, that are to be deep-fried are coated with egg and breadcrumbs, or a batter and then dipped into the hot oil. It is best to marinate the fish, remove excess moisture, dab in seasoned flour, seasoned egg wash and then the crumbs, fresh or dry. You may directly dip it into a batter and deep-fry it. , Temperature of oil will vary according to thickness of the pieces of the fish to be fried.

12.3.5 Shallow Frying or Pan Frying (Meuniere)

For this method of cooking, either use only clarified butter or half oil and half clarified butter. This should be heated well in a shallow pan. The pieces of fish should be seasoned, marinated, then dabbed with seasoned flour and shallow fried on both sides till golden.

12.3.6 Grilling

This is a popular method for preparing fish. The fillets are marinated, the excess moisture removed and then they are placed on a greased grill. After cooking for a few minutes the placement is changed to get the grill marks, then the fillet is turned and it is cooked on the other side too. These preparations are more often accompanied by savory clarified butters- mostly lemon or garlic.

12.3.7 Steaming

This method cooks the food by surrounding it with a vapor bath. Foods are placed in a closed vessel and are above, not touching the liquid. As the liquid comes to a boil some of it will turn into steam. This circulates around the food providing an even moist environment, which allows the food to retain its natural juices.

Properly steam foods don't generally lose much of their original value and are exceptionally moist and tender.

- Bring the liquid to a boil.
- Add the main ingredient to the steamer on a rack, in a single layer.
- Cover the steamer, cook till appropriate doneness.
- Serve with appropriate sauce and garnish. Steamed food should be moist and plump. There should be no hint of it being rubbery or dry.

12.3.8 En Papillote

In this variation of steaming, the main item and accompanying ingredients are encased in parchment paper or foil and cooked in a hot oven. The main item rests on a bed of herbs or vegetables and the steam created by the natural juice covers the food to cook.

As the steam volume increases, the paper puffs up.

- Cut the foil into the appropriate size and spread butter on it.
- Place a bed of aromatics, vegetables or sauce and wine on the base.
- Put the main ingredient over it.
- Cover the paper and crimp the edges.
- Put it on a hot platter into the oven.
- Bake until it is puffed.

12.3.9 Barbecuing








Fish is naturally moist so needs little basting, but for extra flavour on the barbecue it can be left to marinade for around half an hour before cooking. If barbecuing a whole fish, slits or slashes at the thickest part will make cooking faster and more even.

Cooking fish in foil parcels will give quick, moist results. Barbecue cooking times are the same for grilling.

12.3.10 Microwave

The microwave is excellent for cooking fish. Always remember to cover the fish with a lid or microwaveable food wrap. Season after cooking and add less liquid than for other methods of cooking. Cooking time varies according to thickness and quantity but as a rule of thumb 450g (1lb) of fillets would cook in about 4-5 minutes plus 2-3 minutes standing time.

12.4 Classical Cuts of Fish

Cut	Description
	The side of a whole fish, obtained after the removal of central bone. A round fish yields 2 fillets and a flat fish yields 4 fillets.
	Steak of a round fish, it is a cut of round fish on the bone
	Steak of flat fish. It is a cut of flat fish on the bone.
	Goujons are thin strips of fish. It is a fillet of fish cut into thin strips of 60 mm (6 cm) long and 6.5mm (.65 cm) thickness approximately
	A cut on the slant taken from a large fish (boneless)
	Small fillet of fish rolled into a cylindrical shape. They are often filled with a fish stuffing and rolled
	Small fillet of fish patted and neatly folded

12.5 Storing Fish

Raw fish can be stored safely in a refrigerator at 40°F or lower for 2 to 3 days. Oily fish will store longer than lean fish and whole fish will store better than steaks and fillets. There are several factors listed below that will have an effect on how well the fish will store.

12.5.1 Market Fish

The amount of time that market fresh fish can be refrigerated will depend on :

- If it was stored properly after it was caught, before it got to the market.
- How fresh the fish was when purchased.
- Whether or not the fish was stored properly on ice at the market.
- The temperatures it is exposed to in transporting from the store to home refrigeration.
- The type of packaging used.

12.5.2 Fresh caught fish

The amount of time that fresh caught fish can be refrigerated will depend on

- How the fish was handled after being caught.
- How long it was kept alive.
- Whether or not it was bruised from flopping around on the bottom of the boat or on the dock.
- If there was any damage done to its skin.
- How soon it was cleaned and if it was cleaned properly.

12.5.3 Rules for storing fish

Follow the instructions below to store fresh fish in the refrigerator properly.

- Remove the fish from the wrapper. Thoroughly rinse the fish in cold water.
- Pat it dry with a paper towel.
- Line a plate or pan with a double layer of paper towels and place the fish on the towels.

- Cover them tightly with plastic wrap or aluminum foil and place in the coldest part of the refrigerator, the top shelf in the back.
- Be sure the fish is tightly wrapped so that if there are any juices from the raw fish, they will not come in contact with any other food.

Conclusion

As seen, fish is a rich source of nutrients and easy to cook. The only drawback of fish cooking is the odor associated with fish cookery. Fish is a favorite staple food of people along coastal regions, be it along sea side's or river beds. Fish is found in abundance as it is easy to breed, but requires a lot of infrastructure.

Though fish is largely good for health, many cases of food poisoning can happen if fish has not been stored properly, this could happen with raw fish preparation. There are many known cases of allergic reactions to fish; hence it should be had once no such food allergies are established in the person.

Key Terms

En papillote	Fin	Finlet
Clams	Mussels	Oyster
Univalves	Bivalves	Crustaceans
Cephalopods	Caviar	Roe

Summary

Fish is considered a good source of nutrients and also a treasure of good fatty acids and essential oils. Having fish beats having any other kind of red meat any day, as it is less on fats and bad cholesterol. Parts of fish are clearly established for the purpose of cutting it neatly and getting the majority of flesh.

Fish is also categorized as round, flat, non-bony, shell fish, caviar and roe. Fish provides protein, fat, carbohydrate, minerals and vitamins. It has to be cooked in such a way that these nutrients are preserved and utilized by the person eating it. Fish needs to be cooked in such a way that its delicate texture is not destroyed, commonly used methods of cooking fish are braising, poaching, frying, deep-frying, shallow frying or pan frying (meuniere), grilling, steaming, en papillote, barbecuing and microwaving.

Storage of fish needs to be done carefully to avoid spoilage of the raw fish and also prevent contamination of food.

Questions

1. What are the edible parts of a fish?
2. Selection of fish has a many points of consideration. Explain all.
3. What is caviar? Give brand names of any 5.
4. Fish is considered better than any other type of meat. Explain why.
5. Explain the procedure of poaching, grilling and steaming of fish.
6. Name and explain the classical cuts of fish.
7. What is the criterion of storing fish?
8. What are the breeds of fresh water fish & sea fish found in India?
9. Name the fish found in Andhra Pradesh and their Telugu names

Poultry

Structure

- 13.0 Introduction
- 13.1 Classification of poultry
- 13.2 Cutting Chicken

Learning Objectives

At the end of the chapter, the student will be able to

- Classify poultry and list the names
- Describe chicken cutting procedure

13.0 Introduction

Poultry is another important part of cookery. It is just as important as fish, egg, and vegetable cookery. Chicken as it is commonly referred to, is famous among all age groups of non vegetarians. Chicken is as commonly used in continental cookery as it is used in Indian cookery. Poultry started off as hunting wild birds and then moved over to domestication of birds for their eggs and meat. Chicken is available in different breeds. These breeds decide the weight and size of the chicken.

Chapter Preview

Chicken and its varieties, has been discussed in the chapter. The best way to cut chicken for optimum yield has been described in detail for complete understanding of the student.

13.1 Classification of Poultry

The chicken is a descendant of the Southeast Asian red jungle fowl first domesticated in India around 2000 B.C. Broiler-fryers, roasters, stewing/baking hens, capons and Rock Cornish hens are all chickens.

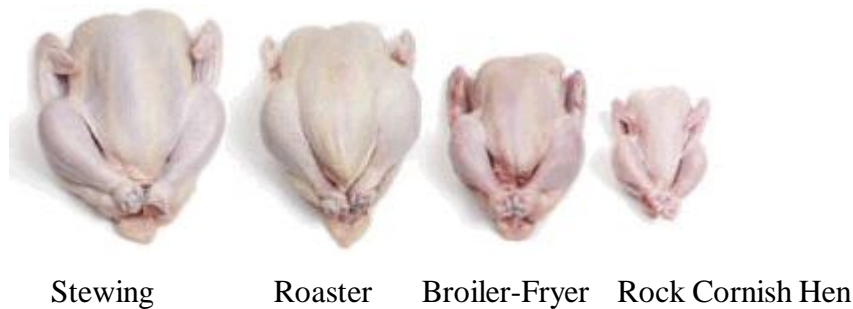


Fig. 13.1

13.1.1 Broiler - Fryer

A chicken ranging in age from 7 to 13 weeks and weighing from 1-1/2 to 4 pounds. Their meat is very tender and they can be prepared by most any cooking method, such as broiling, braising, frying, roasting, and grilling. Depending on their size, a broiler-fryer will generally serve 3 or 4 people.

13.1.2 Roaster

A chicken ranging in age from 3 to 5 months and weighing from 3-1/2 to 7 pounds. Their meat is tender and more flavorful than the broiler-fryer chickens. They make a good roasting chicken but can be prepared by other methods and are good in other dishes. A roaster chicken will generally serve approximately 5 to 7 people.

13.1.3 Stewing Chickens

A mature chicken, which is over 10 months old and weighing in the range of 4 to 7 pounds. Their meat is very flavorful but tougher than that of the broiler-fryers and roasters. They are best used for stews and soups, or should be cooked slowly with a moist heat method such as simmering or braising.

13.1.4 Capons

Male chickens that have been castrated. They are generally under 8 months old and will weigh in the range of 5 to 9 pounds. The capon has more white meat but generally has a higher fat content. Their meat is the most flavorful of all the chickens and it is very tender. Capons are great roasting chickens and will serve approximately 6 to 9 people.

13.1.5 Rock Cornish Hen

The offspring of a Cornish chicken or a Cornish chicken crossed with another breed of chicken. The Cornish hen is a young, immature chicken, usually 5-6 weeks old, with a dressed weight of not more than 2 pounds. They are readily available in most supermarkets, though sometimes frozen, and will serve two people per bird. Usually roasted whole.

13.1.6 Poussin

Are baby chickens that are slaughtered at three to four weeks of age and weigh about 1 pound. They are commonly used in restaurants for single servings and tend to taste better than game hens. They are purchased at high-end grocery stores and specialty meat retailers, usually frozen.

13.1.7 Hen

A mature female chicken. Chickens of this classification are generally spent hens. Referred to as fowl, hens may be further classified as heavy or light depending on their breed or weight. Hens may be used for stewing, baking or may be deboned for use in processed meats.

13.1.8 Cock or Rooster

A mature male chicken with coarse skin and toughened, dark meat. Roosters are generally spent breeders that are deboned for use in processed meats. Requires long, moist cooking

One does not typically know the breed of chicken being purchased, since it's not disclosed by most producers.

13.2 Cutting Chicken



Step 2



Step 3



Step 4



Step 5



Step 6



Place chicken, breast side up, on a cutting board. Cut skin between thighs and body.

Grasping one leg in each hand, lift chicken and bend back legs until bones break at hip joints.

Remove leg and thigh from body by cutting (from tail toward shoulder) between the joints, close to bones in back of bird. Repeat for other side.

To separate thighs and drumsticks, locate knee joint by bending thigh and leg together. With skin side down, cut through joint of each leg.

With chicken on back, remove wings by cutting inside of each wing just over joint. Pull wing away from body and cut from top down through joint.

Separate breast and back by placing chicken on neck end or back and cutting (toward board) through joints along each side of rib cage.

Step 7

To cut breast into halves, place skin side down on board and cut wishbone in two at V of bone.

Step 8

The picture on the left shows a whole chicken cut in 10 pieces. a. Legs, b. thighs, c. wings, d. part of back portion, e. tail end of back portion, f. breasts.

Conclusion

Chicken is not the only bird used in cookery. Ducks, geese, quails, game birds, partridges are bred for their meat. Ostrich & emu meat too, is being popularized now-a-days. These birds are also hunted for their meat. As a general rule wild birds yield less amount of meat than a bird bred for slaughtering. Wild birds are also considered tastier than their domesticated counterparts. These birds are bred for not just their meat but also their eggs. Over a period of time, chicken has turned out to be a popular solution for meat lovers, the other birds are generally used occasionally as specialty dishes.

Key Terms

Broiler-Fryer

Roaster

Capons

Rock Cornish Hen

Poussin

Cock or Rooster

Summary

Chicken is used widely for its meat and eggs. There are various varieties of chicken available today in the market. These birds are bred in large chicken coops and sold all over the world. The use of chicken meat has increased, especially in India.

Questions

1. How are chickens classified?
2. How can chicken be cut to give the maximum yield?

UNIT

14

Meat Cookery**Structure**

- 14.0 Introduction
- 14.1 Beef
- 14.2 Pork and Ham
- 14.3 Lamb
- 14.4 Methods of cooking meat

Learning Objectives

At the end of the chapter, the student will be able to

- Differentiate between meats
- Describe and explain the cuts of meat in beef, pork, lamb and mutton
- List and explain the methods used in meat cookery

14.0 Introduction

A variety of meats are available for consumption, from lamb, pork, beef, etc. These meats are used for both Indian & continental cookery. There are different grades of meat available for cooking. Standard have been established for cutting of meat in such a way that every part of the animal is used completely.

The flesh, innards and carcass, every part is used for cooking, either in the form of stock, soup, hors'd ouvres, and also as a part of the main course.

Chapter Preview

The chapter describes different meats used in cooking and the way meat is cut off the carcass for optimum usage. The cuts are named in each type of animal depending on the side where the cut has been made. These meats are collectively termed as red meats and are high on fat, protein and also have a high content of cholesterol. These meats have stronger binding in the form of sinews and need to be softened before cooking. Meat tenderizers are applied on the meats to soften them before cooking. A variety of methods of cooking are applied to cook these meats.

14.1 Beef

There are five grades for Veal/Calf: prime, choice, good, standard, and utility.

Prime and choice grades are juicier and more flavorful than the lower grades. Because of the young age of the animals, the meat will be a light grayish-pink to light pink, fairly firm and velvety. The bones are small, soft, and quite red. Cuts such as chops can be cooked by the dry-heat method of grilling or broiling.

Standard and Commercial grades – frequently are sold as upgraded or as “store brand” meat.

Utility grade - is seldom, if ever, sold at retail but is used instead to make ground beef and processed products.

14.1.1 Beef Cuts

1. Shin
2. Chuck (Inside)
3. Blade (outside)
4. Cube roll/Scotch fillet
5. Rib Eye
6. Prime ribs
7. Short ribs
8. Brisket
9. Wing rib

10. Strip loin/Porter house/T-Bone
11. Sirloin
12. Fillet
13. Flank
14. Flank skirt
15. Rump
16. Top side (Inside leg)
17. Silver side (Outside leg)
18. Thick flank

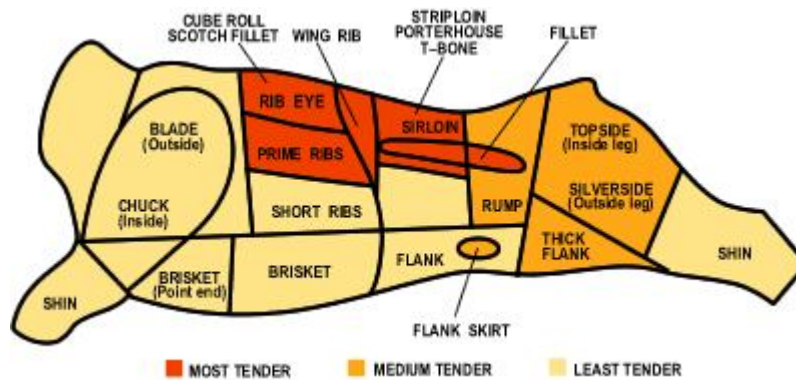


Fig. 14.1 Beef Cuts

14.2 Pork and Ham

Pork and Ham Pork is not graded with USDA quality grades as it is generally produced from young animals that have been bred and fed to produce more uniformly tender meat. Appearance is an important guide in buying fresh pork. Look for cuts with a relatively small amount of fat over the outside and with meat that is firm and grayish pink in color. For best flavor and tenderness, meat should have a small amount of marbling. Marbling is small streaks of fat that are found within the muscle and can be seen in the meat cut.

Pork's consistency makes it suitable for a variety of cooking styles. Chops can be prepared by pan broiling, grilling, baking, braising, or sautéing. Ribs can be braised, roasted, or grilled. Slow cooking yields the most tender and flavorful results. Tenderloins are considered to be the most tender and tasty cut of pork.

14.2.1 Pork Cuts

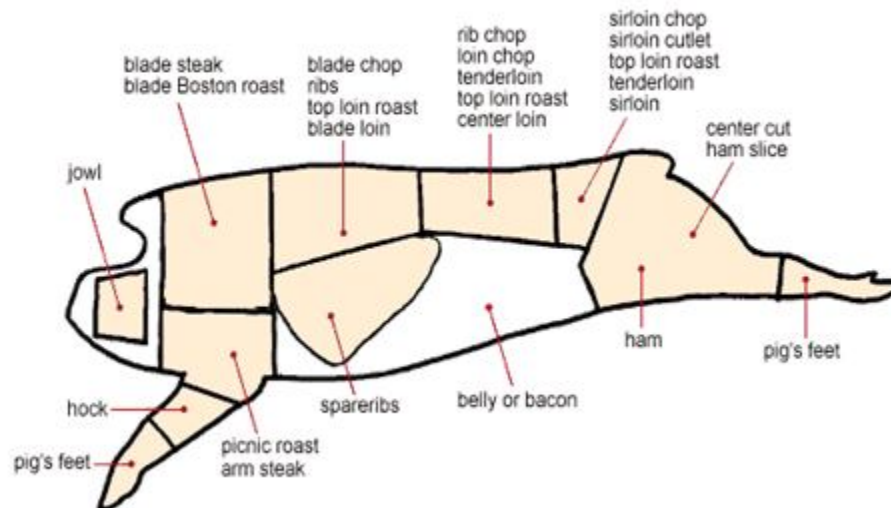


Fig. 14.2 Pork Cuts

14.3 Lamb

14.3.1 Lamb and Mutton

There are five grades for lamb. Normally only two grades are found at the retail level — prime and choice. Lower grades of lamb and mutton (meat from older sheep) — good, utility, and cull — are seldom marked with the grade. Lamb is produced from animals less than a year old. Since the quality of lamb varies according to the age of the animal, it is advisable to buy lamb that has been USDA graded.

14.3.1.1 Prime Grade

It is very high in tenderness, juiciness, and flavor. Its marbling enhances both flavor and juiciness.

14.3.1.2 Choice Grade

It has slightly less marbling than prime, but still is of very high quality. Most cuts of prime and choice grade lamb (chops, roasts, shoulder cuts, and leg) are tender and can be cooked by the dry-heat methods (broiling, roasting, or grilling). The less tender cuts — breast, rib lets, neck, and shank — can be cooked slowly by the moist-heat method (braising) to make them tenderer.

14.3.2 Lamb Cuts

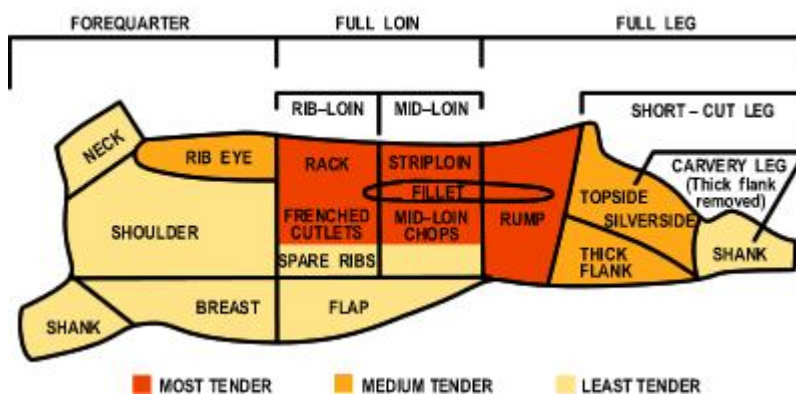


Fig. 14.3 Lamb Cuts

14.4 Methods of Cooking Meat

Handy tips for cooking methods with beef and lamb, including which cuts are most suited to each method.

14.4.1 Braising

Braising - is a moist heat cooking method recommended for less tender cuts of meat. Braising is an excellent method for cuts with high amounts of connective tissue making them succulent and tender. For braising, meat is usually cut into serving-size portions rather than just cubes (as in stew).

14.4.2 Grilling and Barbecuing

Grilling is a fast, dry method of cooking tender cuts with radiant heat directed from below or above the meat. Char-grilling or barbecuing, and fan-grilling are variations on this method.

Beef and lamb cuts that are best for grilling are suitable for char-grilling, barbecue cookery and pan-grilling; most are also suitable for pan-frying. Some cuts need to be cut into smaller pieces for sautéing and stir-frying.

14.4.3 Pot Roasting

Pot-roasting is the term applied to cooking larger joints or cuts (eg beef topside or fresh silverside in a 1.5 to 2kg piece) in a similar way to braising. However, it is carried out in a deep covered pot without any, or with barely any liquid. The meat is seared or browned first in a little butter or oil, then placed on a bed of browned root vegetables, or bones and vegetables. The pot is tightly

covered and the meat cooked gently. A pot-roast may be cooked in a pot or pressure cooker, in a bratt kettle, or in the oven. The small amount of liquid and the vegetables produce sufficient steam to make this a moist heat method ideal for the medium-tender roasting cuts.

14.4.4 Pan - Frying

Pan-frying (shallow frying) is a fast cooking method for small, tender cuts in a pan containing a small quantity of hot fat, oil, butter or clarified butter. This may be done in a frying pan, sauté pan, bratt pan (commercial cooking pan; electrically heated with lid, similar to electric frypan) or wok. The pan is not covered during frying.

Sautéing and stir-frying are variations on this method.

14.4.5 Roasting

Roasting is a dry heat method that may use a small amount of fat or oil as a baste. The meat is cooked in an oven or on a rotating spit over a fire, gas flame or electric grill bars.

- Joints with fat cover - beef and lamb cuts with plenty of outer fat cover, fat seams or marbling are best roasted at low to moderate temperatures. This results in less shrinkage and better serving yields.
- Very lean or totally trimmed cuts are better rare-roasted at higher temperatures, or first seared then roasted.

14.4.6 Microwave

Microwave cooking can be used for cooking or reheating meat. Microwave cooking is quick, convenient, safe and economical. The microwave is useful for quickly defrosting meat and for reheating prepared meat dishes.

Microwave ovens come in various sizes with different levels of power and choice of functions, e.g. defrost, browning, reheating. Combination convection and microwave ovens combine dry heat or steam with the addition of microwave energy.

14.4.7 Steaming

Steaming is a moist heat cooking process. The meat does not come into contact with the cooking liquid but instead is cooked by surrounding steam, sometimes under pressure. Steaming results in tender, well flavoured, juicy meat with minimum weight loss or shrinkage. Steaming under pressure is fast and easy, saves on energy and provides accurate meat portioning and cost control.

14.4.8 Poaching

Poaching is a very gentle, moist heat method of cooking using a minimum amount of reduced liquid or stock that is kept at just below simmering point, approximately between 90 to 94°C (194 to 201°F). Poaching liquid should show very little movement - a mere “murmur” or shimmer at the surface, with no sign of bubbles bursting.

14.4.9 Simmering

Simmering is a slow, gentle, moist method of cooking in liquid or stock, usually in a deeper pan than that used for poaching. Liquid is heated to just below boiling point, approximately 95 to 99°C (203 to 210°F) - higher than that used for poaching, with slightly more movement in the cooking liquid; tiny bubbles rising slowly to the surface and only occasionally bursting. This is much less movement than when boiling. Simmering can be done in a deep pan, stock pot on the stove, kettle, bratt pan or in a combination oven.

Simmering is best for cuts with higher amounts of connective tissue which need long, slow cooking to tenderize them. But this method can also be used for more tender cuts, e.g. beef rump cooked medium-rare to medium degree of doneness.

14.4.10 Stewing

In stewing, meat cut into smaller pieces or cubes is cooked gently in liquid to completely cover it, and the vegetables are included. A stew can be simmered in a pot on the stove top or cooked in a covered casserole in the oven. Stewing is suitable for the least tender cuts of meat that become tender and juicy with the slow moist heat method. Cuts having a certain amount of marbling and gelatinous connective tissue give moist, juicy stews.

When stewing lean meat, even though it is surrounded by liquid, it can become dry in texture if cooked at too high a temperature for too long. While prolonged simmering or cooking close to the boil is necessary to soften connective tissue and make tough meat tender, it also dries lean meat out. (As the meat is heated the muscles coagulate, proteins shrink and water is squeezed out. Cooking meat in liquid does not stop this water loss). After initial browning, a low temperature or sub-simmer gives best results.

Conclusion

Meats are becoming increasingly popular not just in hotel or restaurant menus but in households too. There are many byproducts of meat being used now, in the form of sausages, steaks, fingers etc. Continental cookery lays a lot

of emphasis on meat cookery as meat is the main course and vegetables, rice, wheat products are used to supplement the main meat course.

Key Terms

Shin	Chuck (Inside)	Blade (outside)	
Cube roll/Scotch fillet	Rib Eye	Prime ribs	
Short ribs	Brisket	Wing rib	
Strip loin	Porter house	T-Bone	
Sirloin	Fillet	Flank	
Flank skirt	Rump	Top side (Inside leg)	
Silver side (Outside leg)	Thick flank	Rib loin	
Mid Loin	Silverside	Shank	Flap

Summary

There are many different types of meat available for cookery, such as Beef, pork and ham, lamb and mutton. Other meats are also used in cookery i.e. game, many a times animals are hunted for their meat, such as deer, bison etc. but there is a wildlife protection rule that condemns poaching for meat.

Methods used for cooking meats are Braising, Grilling and barbecuing; Pot roasting, Pan – frying, Roasting, Microwave, Steaming, Poaching, Simmering and Stewing.

Questions

1. Name all the cuts of beef and pork.
2. Draw and label the different cuts of lamb.
3. Draw and label the cuts of beef.
4. Draw and label the cuts of pork.
5. What are the various methods used in meat cookery? Explain any 2 in detail.

UNIT

15

Bakery & Patisserie**Structure**

- 15.0 Introduction
- 15.1 Bakery
- 15.2 Basic ingredients used in bakery and patisserie
- 15.3 A Table of Sugar-Cooking Stages
- 15.4 Shortening (fats & oils)
- 15.5 Other dairy products

Learning Objectives

At the end of the chapter, the student will be able to

- List and identify the ingredients used for bakery
- List and identify the different types of sugars used in bakery
- Name, identify and list the shortening ingredients used

15.0 Introduction

Bakery is a specialized area; it requires a lot of skill for creating the perfect product. There are a lot of aspects to be considered during baking, the basic ingredients, temperatures, the right mix of ingredients etc. All these in right

proportions make a perfect baked product. Bakery is also an area where, there is a lot of scope of showing creativity in the dishes as well as the eye appeal.

Patisserie, sugar craft, sugar cookery is also a very creative area, with scope of making new products ranging from display to edible ones. This avenue combines art, craft and science in bakery.

Chapter Preview

This chapter discusses the fine craft of bakery and the products that are churned out by bakers. The basic ingredients required for baking are sugar, flour, oils and many more to supplement the products and create variety. Sugar itself, has many different categories like granulated, brown, liquid and invert sugar. The different forms of sugars are white, caster, granulated, icing, decorating, vanilla, cube, jam and jelly sugar.

Brown sugars too, are of different varieties granulated, soft brown, demerara and muscovado.

Sugars have their distinct stages in cookery, from sugar syrup to hard ball formation. These stages and their understanding is compulsory for sugar craft.

Fat is vastly used in almost all types of bakery products for shortening and creating textures. Pastries are layered with fat get the desired layering.

15.1 Bakery

Bakery is a place where bread is manufactured and sold.

The term Patisserie applies to sweet and savory pastries and cakes generally baked in the oven and also to the art of pastry cooked as well as to the place where pastries are made and sold. The pastry cook (patissier) usually makes sweet things: - hot, cold or ice desserts all types of cakes etc. Quiches, vol-au-vents, pate en croute (in pastry), tarts, bouchees, rissoles and savory crepes etc, are generally made by the chef or cook. Patisseries closely link with the manufacture of ice cream and confectionary, which includes working with sugar, crystallized (candied) fruits, almond paste, nougatine, decoration etc, and uses sweetened creams and sweet sauces.

15.2 Basic Ingredients used in Bakery and Patisserie

15.2.1 Sugar

Scientifically, sugar refers to any monosaccharide or disaccharide. Monosaccharides (also called “simple sugars”), such as glucose, store chemical energy which biological cells convert to other types of energy. In non-scientific

use, the term sugar refers to sucrose (also called “table sugar” or “saccharose”) — a white crystalline solid disaccharide. Humans most commonly use sucrose as their sugar of choice for altering the flavor and properties (such as mouth feel, preservation, and texture) of beverages and food. Commercially produced table sugar comes either from sugar cane or from sugar beet. Manufacturing and preparing food may involve other sugars, including palm sugar and fructose, generally obtained from corn (maize) or fruit.

Sugar is the naturally occurring nutrient that makes food taste sweet. It is a carbohydrate along with starch. Carbohydrates are our main source of energy. Starch-rich foods include bread, rice, pasta, and potatoes, whereas sugars are found in fruit and vegetables, honey, jam and many soft drinks.

15.2.2 Uses of Sugar

Sugar has many different uses:

- As a sweetener: sugar is added to foods or drinks to make them taste more pleasant. For example, it balances the bitterness of coffee or reduces the tartness of sour fruit.
- As a preservative: sugar is a natural preservative that binds water to prevent the growth of micro-organisms, thereby reducing food spoilage, as in jams and preserves.
- As a bulking agent: sugars give texture to a variety of foods from jams to frozen products.

15.2.3 Processing of Sugar

The natural sugar stored in the cane stalk or beetroot is separated from rest of the plant material through a process known as refining.

For sugarcane, the process of refining is carried out in following steps:

- Pressing of sugarcane to extract the juice.
- Boiling the juice until it begins to thicken and sugar begins to crystallize.
- Spinning the crystals in a centrifuge to remove the syrup, producing raw sugar.
- Shipping the raw sugar to a refinery where it is washed and filtered to remove remaining non-sugar ingredients and color.
- Crystallizing, drying and packaging the refined sugar.

Beet sugar processing is similar, but it is done in one continuous process without the raw sugar stage. The sugar beets are washed, sliced and soaked in hot water to separate the sugar-containing juice from the beet fiber. The sugar-laden juice is then purified, filtered, concentrated and dried in a series of steps similar to cane sugar processing. Sugarcane in India is used to make sugar, khandsari or gur.

15.2.4 Categories of Sugar

However, sugar products produced worldwide are divided into four basic categories: granulated, brown, liquid sugar and invert sugar.

15.2.4.1 Granulated Sugar

It is further classified in to various types based on color and grain size. According to the Indian Standards Specifications (ISI), there are around 20 grades of sugar based on the grain size and colors. The color series has four grades designated as 30,29,28 and 27, while the grain size has five grades namely A, B, C, D, E. Bulk of production in the country is of C, D and E grains, branded as large, medium and small and has color specification of 30. The D grade produced in the country is comparable to world standards.

15.2.4.2 Brown Sugar

It is used in home and food industry to develop the rich molasses type flavor in cookies, candies and similar products. It consists of sugar crystals coated in molasses syrup (Molasses or treacle is a thick syrup by-product from the processing of the sugarcane or sugar beet into sugar. In some parts of the U.S., “molasses” also refers to sorghum syrup) with natural flavor and color. Many sugar refiners produce brown sugar by boiling a special molasses syrup until the brown sugar crystals are formed. A centrifuge spins the crystals dry. Some of the syrup remains giving the sugar its brown color and molasses flavor. Other manufacturers produce brown sugar by blending special molasses syrup with white sugar crystals.

15.2.4.3 Liquid Sugar

Liquid sugars were developed before today’s methods of sugar processing made transport and handling granulated sugars practical. Liquid sugar is essentially liquid granulated sugar and can be used in products wherever dissolved granulated sugar might be used.

15.2.4.4 Invert Sugar

Inversion or chemical breakdown of sucrose results in invert sugar, an equal mixture of glucose and fructose. Available commercially only in liquid form, invert sugar is sweeter than granulated sugar. It is used in carbonated beverage industry and in food products to retard crystallization of sugar and retain moisture.

15.2.5 Various Forms of Sugar

15.2.5.1 White Sugar

Refining raw sugar obtained from sugar cane or sugar beet, removing all impurities, makes white sugar.

15.2.5.2 Caster Sugar

Caster sugar is white, granulated sugar with very fine sugar crystals. It is also called superfine sugar, ultra fine sugar or bar sugar. It is best used in baking and desserts, in making of cakes, mousses and drinks, as well as in foods and pastries that are sprinkled, rolled or coated with sugar. Also known as Breakfast sugar. In dishes where sugar is to be whipped with eggs, cream etc, it is best to use superfine sugar.



Fig. 15.1 Caster Sugar

15.2.5.3 Granulated Sugar

Regular granulated sugar has coarser crystals than caster or superfine sugar. It may be used in making preserves, jams, marmalades and sugar syrups. In making jams, marmalades, preserves etc, superfine sugar can be replaced with coarser granulated



Fig. 15.2 Granulated Sugar

15.2.5.4 Icing Sugar

Icing sugar, also known as confectioners' sugar, is made of white sugar ground into a smooth, white powder and used in icings, confections, drinks etc. There is usually an amount of starch mixed in icing sugar to prevent clumping. Also differently colored or flavored icing sugars can be found on sale.



Fig. 15.3 Icing Sugar

15.2.5.5 Decorating Sugar

This white, large crystal sugar is unevenly shaped and used to sprinkle on top of sweet buns and other baked goods for garnish. It may also be called pearl, sanding, coarse or crystal sugar. There are also colored decorating sugars on sale.

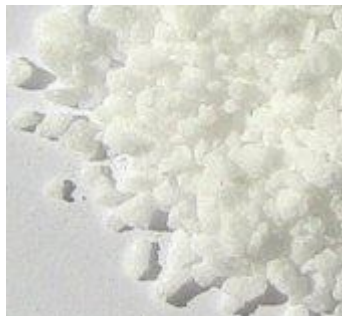


Fig. 15.4 Decorating Sugar

15.2.5.6 Vanilla Sugar

A rather good substitute for real vanilla, vanilla sugar is powdered or granulated white sugar flavored with real vanilla bean. Usually there are little black dots of powdered vanilla bean or seeds visible in the sugar.

Vanilla sugar is used instead of vanilla bean to give vanilla flavour to various sweet baked goods, desserts, whipped cream and beverages. It is added to foods only in small amount (usually 1 - 2 teaspoons per a batch of batter, dough etc).



Fig. 15.5 Vanilla Sugar

15.2.5.7 Cube Sugar



Fig. 15.6 Vanilla Sugar



Fig. 15.7 Brown Sugar Cubes

Also called lump sugar, sugar cubes are made by molding and drying moistened, hot granulated sugar. Coming in various forms and colors, lump sugar is mainly used to sweeten various hot drinks. In cooking, lump sugar and sugar cubes may be used instead of granulated sugar in recipes where sugar is melted, like syrups and caramel. Sugar cubes are also used in desserts like Crêpes Suzette, where they are rubbed against the zest of citrus fruit to absorb their essential oils, in order to flavor the dish. Lump sugar can be ground into granules or powdered using a mortar, a blender or a food processor.

15.2.5.8 Jam Sugar

Jam sugar is a special gelling sugar used in making jams, marmalades, jellies and other preserves, instead of regular white sugar. It consists of white, granulated sugar (about 98 %) added with natural fruit pectin (E440, gelling agent), citric

acid (E330, antioxidant) and potassium sorbate (E202, preservative). When using jam sugar, the cooking time of various preserves is often reduced, thus better maintaining the flavours, colors and vitamins of the fruits and berries used. Jam sugar cannot be used instead of regular sugar in baking or cooking, but only in making of jams, marmalades and fruit compotes or soups.



Fig. 15.8 Jam Sugar

15.2.5.9 Jelly Sugar

Jelly sugar is used to decorate desserts and pastries and to make set, clear dessert jellies. Jelly made with jelly sugar is spooned or brushed over berry and fruit garnishes to give them a thin and shiny, protective jelly coating. Jelly sugar is not suitable to be used in milk-based jellies and puddings or in canning and preserving.

Jelly sugar consists of white, granulated sugar, glucose syrup, natural fruit pectin (E440, gelling agent) and citric acid (E330, antioxidant).

15.2.6 Brown Sugars

Traditional, natural brown sugars are made of partially refined raw cane sugar, containing certain impurities, which give them their brown colour. Depending on the sugar type, the colour ranges from very dark to pale brown, and the taste from a strong, almost liquorice-like to a lighter molasses flavor. These types of brown sugars include the demerara and muscovado sugars. Today, commercially produced brown sugars are mostly made by coating granulated, refined white sugar with a thin layer of dark molasses, giving them a brown colour with molasses flavor.

15.2.6.1 GRANULATED BROWN SUGAR

Regular granulated brown sugar is made by coating white sugar with a layer of dark molasses. It has loose, non-sticky sugar crystals with the colour ranging from light to dark brown. This type of brown sugar has a light, clean

molasses flavor and a coarser texture than white, superfine sugar. Granulated brown sugar can be replaced for example with demerara sugar.



Fig. 15.9 Granulated Brown Sugar

15.2.6.2 Soft Brown Sugar

Soft brown sugar is made by coating white sugar with a layer of dark molasses. It is firmly packed, moist and slightly sticky, and has a stronger molasses flavor than brown, loose sugar. Soft brown sugar should be stored wrapped airtight to prevent it from drying and hardening into a clump.



Fig. 15.10 Soft Brown Sugar

15.2.6.3 Demerara Sugar

Named after the Demerara area of Guyana, the coarse-grained demerara sugar is brown, partially refined raw sugar containing some residual impurities. The colour of demerara sugar varies from golden brown (e.g. turbinado sugar) to dark brown, with a strong dark molasses flavor. Demerara sugar can be used to sweeten and flavour various hot beverages, and it is used in fruit and berry desserts or in making candies and toffees. Depending on its colour, texture and depth of flavor, it can be used to replace granulated or soft brown sugar in many sweet and savory dishes.

Turbinado sugar is a further refined type of demerara sugar with a pale colour and a mild flavor.



Fig. 15.11 Demerara Sugar

15.2.6.4 Muscovado Sugar

Muscovado sugar is the darkest of the partially refined brown raw sugars. It has slightly sticky crystals, with the colour varying from light to dark brown. Muscovado sugar can be used to flavor tea, coffee and other beverages. It brings deep and dusky flavor of molasses into various dishes and desserts. Light muscovado sugar can be used to replace soft brown sugar in cooking and baking.



Fig. 15.12 Muscovado Sugar

Barbados sugar is a type of muscovado sugar with a finer texture.

15.2.7 Sugar Syrups

Heating a measured quantity of sugar and water to boiling to dissolve the sugar and then boiling very briefly until the syrup is clear makes simple sugar syrups. Cooked sugar syrups differ from simple syrups in that they are left to boil until the water evaporates and the sugar cooks to a higher temperature. (The quantity of water used to make a cooked sugar is not crucial because it will

be completely boiled off; you need use only enough to dissolve the sugar and in fact, some professionals do without the water entirely). Cooked sugars are categorized by different stages of cooking, from the soft ball stage at a temperature of about 240°F, through hard ball, light crack, hard crack and finally to caramel, which measures well over 300°F, depending on the darkness of the color.

When preparing a cooked sugar, it is important that the sugar be completely dissolved before it comes to a boil. If not, you risk crystallizing and burning the sugar. To further prevent crystallization, use a pastry brush dipped in water to wash any sugar crystals down off the sides of the pan during cooking. Test the temperature of a cooked sugar either with a candy thermometer or by spooning a bit of the boiling syrup into ice water: At the soft ball stage it will form a very soft ball that will not hold its shape; at the hard ball stage it will form a hard but still pliable ball that will hold its shape; at light crack the sugar is becoming brittle but still pliable; at hard crack the sugar is brittle.

Sugar syrups are used in sorbets, to poach fruits and to soak certain cakes. Sugar cooked to the softball stage is used to make Italian meringue and sugar cooked to the hard crack stage is used to make masterpieces of pulled sugar. Caramel is used in a variety of preparations, from sauces to praline.

15.3 A Table of Sugar-Cooking Stages

Cooking stage	Temperature
Pearl	104 to 106° C / 220 to 222° F
Thread	106 to 112° C / 223 to 235° F
Blow or Soufflé	110 to 112° C / 230 to 235° F
Soft Ball	112 to 166° C / 234 to 240° F
Firm Ball	116 to 120° C / 242 to 248° F
Hard Ball	121 to 129° C / 250 to 265° F
Soft crack	132 to 143° C / 270 to 290° F
Hard crack	149 to 154° C / 300 to 310° F
Light caramel	160 to 170° C / 320 to 338° F
Dark caramel	176 to 182° C / 350 to 360° F

15.4 Shortening (Fats & Oils)

Vegetable fats and oils are substances derived from plants that are composed of triglycerides. Nominally, oils are liquid at room temperature, and fats are solid; a dense brittle fat is called a wax. Although many different parts of plants may yield oil, in actual commercial practice, oil is extracted primarily from the seeds of oilseed plants. The temperature-based distinction between oils and fats is imprecise, since the temperatures of rooms vary, and typically any one substance has a melting range instead of a single melting point.

15.4.1 Cooking Oil

Many vegetable oils are consumed directly, or used directly as ingredients in food - a role that they share with some animal fats, including butter and ghee. The oils serve a number of purposes in this role:

- Texture - oils can serve to make other ingredients stick together less.
- Flavor - while less-flavorful oils command premium prices, oils such as olive oil or almond oil may be chosen specifically for the flavor they impart.
- Flavor base - oils can also “carry” flavors of other ingredients, since many flavors are present in chemicals that are soluble in oil.

Secondly, oils can be heated, and used to cook other foods. Oils that are suitable for this purpose must have a high flash point. Such oils include the major cooking oils - canola, sunflower, safflower, peanut etc. Some oils, including rice bran oil, are particularly valued in Asian cultures for high temperature cooking, because of their unusually high flash point.

15.4.3 Fats

Fats consist of a wide group of compounds that are generally soluble in organic solvents and largely insoluble in water. Although the words “oils”, “fats” and “lipids” are all used to refer to fats, “oils” is usually used to refer to fats that are liquids at normal room temperature, while “fats” is usually used to refer to fats that are solids at normal room temperature. “Lipids” is used to refer to both liquid and solid fats. Examples of edible animal fats are lard (pig fat), butter, ghee, marine fish oils. They are obtained from fats in the milk, meat and under the skin of the animal. Examples of edible plant fats are peanut, soya bean, sunflower, sesame, coconut, olive and vegetable oils. Margarine and vegetable shortening - which can be which derived from the above oils -are used mainly for baking. These examples of fats can be categorized into saturated fats and unsaturated fats.

15.4.4 Saturated Fats

Saturated fat is fat that consists of triglycerides containing only saturated fatty acids. Saturated fatty acids have no double bonds between the carbon atoms of the fatty acid chain; hence, they are fully saturated with hydrogen atoms. Foods that contain a high proportion of saturated fat are butter, ghee, suet, tallow, lard, coconut oil, cottonseed oil, and palm kernel oil, dairy products (especially cream and cheese), meat, and some prepared foods. The higher saturated fats such as coconut oil and cow butter are more solid at room temperature, are more stable during cooking, and have longer shelf lives than oils such as olive oil or other liquid vegetable oils.

15.4.5 Unsaturated Fats

An unsaturated fat is a fat or fatty acid in which there are one or more double bonds in the fatty acid chain. A fat molecule is monounsaturated if it contains one double bond, and polyunsaturated if it contains more than one double bond.

15.4.6 Shortening

Shortening is a semisolid fat used in food preparation, especially baked goods, and is so called because it inhibits the formation of long gluten strands in wheat-based doughs, giving them a “short” texture (as in shortbread). The term “shortening” can be used more broadly to apply to any fat that is used for baking and which is solid at room temperature, such as butter, lard, or margarine, but as used in recipes it refers to a hydrogenated vegetable oil that is solid at room temperature. Shortening has a higher smoke point than butter and margarine, and it has 100% fat content, compared to 80% for butter and margarine. Shortening is the animal or vegetable fat that is used in baking. Despite its worldwide usage and availability, vegetable shortening is believed to be damaging to human health since it generally contains trans fats in the form of partially hydrogenated vegetable oil. After the oils are hydrogenated they become solid at room temperature, but the type of trans fat generated in this process has adverse health effects. Non-hydrogenated vegetable shortening can be made from palm oil.

15.4.6.1 Butter & Margarine

Butter is a dairy product, made by churning fresh or fermented cream or milk. Butter is used as a spread and a condiment, as well as in cooking applications such as baking, sauce making, and frying. Butter consists of butterfat surrounding minuscule droplets consisting mostly of water and milk proteins. The most common form of butter is made from cows’ milk, but it can also be made from the milk of

other mammals, including sheep, goats, buffalo, and yaks. Salt, flavorings, or preservatives are sometimes added to butter. Rendering butter produces clarified butter or ghee, which is almost entirely butterfat. When refrigerated, butter remains a solid, but softens to a spreadable consistency at room temperature, and melts to a thin liquid consistency at 32–35 °C (90–95 °F).

Margarine as a generic term can indicate any of a wide range of butter substitutes. In many parts of the world, margarine has become the best-selling table spread, although butter and olive oil also command large market shares. Margarine is an ingredient in the preparation of many other foods. Modern margarine can be made from any of a wide variety of animal or vegetable fats, and is often mixed with skimmed milk, salt, and emulsifiers. Margarine made from vegetable oils is especially important in today's market, as it provides a substitute for butter which is both vegan and pareve (Kosher compliant). Nearly all margarine is salted, which makes shortening (which contains no salt) a better choice for baking.

15.5 Other Dairy Products

Dairy products are generally defined as foodstuffs produced from milk. They are usually high-energy-yielding food products. A production plant for such processing is called a dairy or a dairy factory. Raw milk for processing generally comes from cows, but occasionally from other mammals such as goats, sheep, water buffalo, yaks, or horses. Dairy products are commonly found in European, Middle Eastern and Indian cuisine, whereas they are almost unknown in East Asian cuisine.

15.5.1 Types of Dairy Products

Various types of dairy products are:

- Milk and its various grades viz. full cream, toned, double toned etc.
- Cream and its various grades viz. single, double, clotted etc.
- Butter
- Yoghurt
- Milk used in various forms for making Indian sweets

15.5.1.1 Milk

Milk is an opaque white liquid produced by the mammary glands of female mammals. In many cultures of the world, especially the Western world, humans continue to consume milk beyond infancy, using the milk of other animals (in

particular, cows) as a food product. For millennia, cow's milk has been processed into dairy products such as cream, butter, yogurt, ice cream, and especially the more durable and easily transportable product, cheese. Milk of not only cows, but also sheep, goats, yaks, water buffalo, horses, and camels is used for human consumption. Cow's milk contains, on average, 3.4% protein, 3.6% fat, and 4.6% lactose, and supplies 66 kcal of energy per 100 grams.

15.5.1.2 Pasteurization

Pasteurization is the process of heating liquids for the purpose of destroying viruses and harmful organisms such as bacteria and yeasts. The process was named after its inventor, French scientist Louis Pasteur. There are two main types of pasteurization used today: High temperature/short time (HTST) and Ultra-high temperature (UHT), also known as Ultra-heat treated. In the HTST process, milk is forced between metal plates or through pipes heated on the outside by hot water, and is heated to 71.7 °C (161 °F) for 15-20 seconds. UHT processing holds the milk at a temperature of 138 °C (250 °F) for a fraction of a second.

FORM	DESCRIPTION
Milk	
Full Cream	Contains 6% milk fat. It is not homogenized.
Toned	Contains no less than 3% of milk fat. It is not homogenized.
Double Toned	Usually contains 1% or 2% milk fat, is generally labeled accordingly and usually homogenized.
Skim	Contains less than 0.1% milk fat. Fortified skim milk has all the proteins & vitamins.
Powdered or dry	Dehydrated milk. The water content is reduced to less than 3 %. Made from either whole or skimmed milk and labeled accordingly.
Evaporated	Milk that has been subjected to ultra high temperatures rapidly cooled & then vacuum packed. 60 % of its water is removed. It has a long life.
Condensed	Evaporated milk that has been sweetened.

Homogenized milk: Milk is often homogenized, a treatment which prevents a cream layer from separating out of the milk.

15.5.3 Cream

Cream is a dairy product that is composed of the higher-butterfat layer skimmed from the top of milk before homogenization. In un-homogenized milk, over time, the lighter fat rises to the top. In the industrial production of cream this process is accelerated by using centrifuges called “separators”. In many countries, cream is sold in several grades depending on total butterfat content. Cream can be dried to a powder for shipment to distant markets.

15.5.3.1 Types of cream

Type	Butterfat Content	Uses
Half and Half Cream	12% fat (range 10.5-18%)	Half and half is a mix of one half whole milk and other half cream, typically used as a cream in coffee.
Single Cream	20%	Cream with a low fat-content, which does not thicken when beaten. Used in both sweet and savory dishes. Also known as light cream.
Whipping Cream	30%	Cream with enough butterfat in it to allow it to thicken when whipped. Does not whip as well as heavy cream but works well for toppings and fillings.
Heavy Cream	36 to 38%	This cream whips denser than whipping cream. Whips up well and holds its shape.
Double Cream	48%	Double cream is the British term for heavy or whipping cream in the United States, but it is a little thicker than our whipping cream. It is easy to over whip it and get it too thick.
Clotted Cream	55 to 60%	Also known as Devonshire or Devon Cream. It is a thick, rich, yellowish cream with a scalded or cooked flavor that is made by heating unpasteurized milk until a

thick layer of cream sits on top. The milk is cooled and the layer of cream is skimmed off. Traditionally served with tea and scones in England.

15.5.3.2 Pasteurized and Ultra Pasteurized

Creams will generally be labeled pasteurized or ultra-pasteurized. Ultra-pasteurized creams will remain fresh longer but pasteurized will provide a better flavor, will whip up fluffier, and will hold up longer. If pasteurized cannot be found, ultra-pasteurized will work.

15.5.4 Yoghurt

Yoghurt or yogurt is a dairy product produced by bacterial fermentation of milk. Fermentation of the milk sugar (lactose) produces lactic acid, which acts on milk protein to give yoghurt its texture and its characteristic tang. Soy yogurt, a dairy-yogurt alternative, is made from soya milk.

Yoghurt is made by introducing specific bacteria strains into milk, which is subsequently fermented under controlled temperatures and environmental conditions especially in industrial production.

In most countries, a product may be called yoghurt only if live bacteria are present in the final product. In the U.S., non-pasteurised yoghurt can be marketed as “live” or containing “live active culture”. A small amount of live yoghurt can be used to inoculate a new batch of yoghurt, as the bacteria reproduce and multiply during fermentation. Pasteurised products, which have no living bacteria, are called fermented milk (drink).

Yoghurt has nutritional benefits beyond those of milk: people who are lactose-intolerant often enjoy yoghurt without ill effects, apparently because live yoghurt cultures contain enzymes which help break down lactose inside the intestine.

15.5.5 Milk in Indian Sweets

There are a variety of milk-based *Barfis* and pastries. These are decorated with raisins, almonds, pistachio and the like. Various combinations of all the above delicacies offer hundreds of varieties of Indian traditional sweets to choose from.

Most Indian sweets are made by boiling down milk to remove the moisture. It is called khoa. Adding butter, sugar and many other flavours, these are turned into barfi, malai, kheer, rasgulla and sandesh.

In North India, lassi is the most popular drink. It may be sweet or salty, made from yoghurt. The south and the west offer fresh coconut sweets. Special and typical sweets that come from Bengal are Sandesh and Rasgullas, made in different ways from cottage cheese or chhena. One notable exception of Bengali sweets is misti doi (sweetened yogurt), in terms of the fact that Bengali cuisine is the only Indian cuisine where plain yogurt is missing.

Some very popular Indian sweets are: - Kheer, Halwa (pudding), Rasgulla (spongy cheese balls, dipped in sugar syrup), Gulabjamun, Rasmalai, Sandesh and many more. 'Kulfi', a creamy preparation of frozen milk and sugar, is the Indian version of ice cream and is extremely popular with the old as well as the new generation.

Conclusion

Bakery is slowly turning into a very lucrative career and business option. The amount of skill required for a baker is very high. Baked products are precise and it is close to impossible to rectify any product that is not made in the right way. Exact proportions, temperatures and even time required - almost with mathematical precision – create the perfect product.

The amount of creativity required is on the same levels of any artist making a painting or a musician composing a piece of music.

Key Terms

Saccharose	Invert sugar	Caster sugar
Brown sugar	Demerara sugar	Muscovado sugar
Thread	Crack	Caramel
Shortening	Margarine	Pasteurization
Toned milk	Skimmed milk	Clotted cream
Yoghurt		

Summary

It is essential to learn about the main ingredients in bakery, which are sugar, milk and fats. Sugar is used either in its granulated form or syrup form too. Sugar needs to be processed before it reaches its final format from the cane

juice level to the grains that we use daily. The categories of sugar range from Granulated, Brown, Liquid to Invert sugar. Sugar is also available in a variety of forms in the market today, such as White, Caster, and Granulated, Icing, Decorating, Vanilla, Cube, Jam and Jelly sugar.

Brown sugars such as Granulated brown sugar, Soft brown sugar, Demerara sugar and Muscovado sugar are also popularly used for the color and effect they lend to the final product.

Sugar syrups are used in many bakery products, Pearl, Thread, Blow or Soufflé, Soft Ball, Firm Ball, Hard Ball, Soft crack, Hard crack, Light caramel, Dark caramel based on the cookery stage.

Shortening agents are used in plenty in the bakery, cooking oil, fats, saturated and unsaturated fats. Shortening brings texture, flavor and is used for many other reasons.

Milk is another key ingredient in bakery. It is used as - cream, milk, yogurt – as an agent that adds moisture to the final product. It also imparts a distinct flavor of its own. A lot of Indian sweets are made of milk and its byproducts.

Questions

1. What are the different types of sugar?
2. What are invert sugars?
3. Differentiate between vanilla sugar and icing sugar.
4. Differentiate between demerara sugar and muscovado sugar.
5. What are the temperatures required to reach the following stages
 - a. Thread
 - b. Soft ball
 - c. Hard crack
 - d. Dark caramel
6. How are fats useful in bakery?
7. Give short answers for
 - a. Skim
 - b. Condensed
 - c. Toned

8. What is the percentage of fat content in
 - a. Clotted cream
 - b. Whipping cream
9. What are yoghurts? Flavored yoghurts?

UNIT

16**Breads****Structure**

- 16.0 Introduction
- 16.1 History and science of bread making
- 16.2 Ingredients of bread
- 16.3 General bread making procedures
- 16.4 Quick breads
- 16.5 Mixing methods
- 16.6 Yeast-raised doughnuts
- 16.7 Types of bread

Learning Objectives

At the end of the chapter, the students will be able to

- List and explain the importance of different ingredients used in bread making
- Describe the bread making procedure
- Explain the mixing methods employed in bread making
- Describe the different types of bread

16.0 Introduction

Breads are being used very frequently as breakfast items and also as convenience foods. They are also available in the traditional slice forms and also as fancy rolls. These rolls are in turn used as burger buns, and for many other purposes.

Off the counter bread slices act as a quick substitute for any meal now-a-days. Shelf life of breads is long and the variety that can be created from breads is in plenty. It can be used as an appetizer, as a part of the main course or even as a dessert.

Desserts are also made from breads, the famous 'double-ka-meetha' from Hyderabad is one such example, and bread pudding is another such example of using bread as a dessert.

A lot of varieties of breads have been created keeping the diet conscious individual in mind. These breads are made from whole wheat flours instead of refined flour, as it has been observed that refined flour is not very beneficial for health as it is literally stripped off its main nutrients.

Chapter Preview

This deals with basic baking terminology, ingredients, and the procedures used to produce breads and desserts. To bake a satisfactory product, one must have a thorough knowledge of these terms, ingredients, and baking procedures. The term bread has been used for centuries to describe a mixture of flour, sugar, shortening, salt, and liquid. This mixture is made into dough, then yeast is added to the mixture to make the dough rise. One kind includes yeast breads such as yeast-raised breads and rolls, sweet-dough rolls of various kinds, coffee cakes, doughnuts, pizza, and quick breads. The other kind includes products leavened by chemical leavening agents such as baking powder. Some of these products are biscuits, muffins, pancakes, cake doughnuts, quick coffee cake, and corn bread. Bread is the most important food produced by the baker. High quality and excellent taste should be maintained regardless of the amount of bread baked.

16.1 History and Science of Bread Making

The first group of people to bake bread were the ancient Egyptians, in 8000 BC. During the Middle Ages, it was common for each landlord to have a bakery, which was actually a public oven; Housewives would bring dough that they had prepared to the baker, who would use the oven to bake it into bread. Bread is staple food of European, Middle Eastern and Indian cultures which is

prepared by baking, steaming, or frying dough. Bread consists minimally of flour and water; salt is present in most cases, and usually a leavening agent such as yeast is used. Bread rises as the gas (Carbon Dioxide or CO₂) produced from the fermenting yeast becomes trapped in the dough. As more gas is released it needs more space and hence the dough is pushed upwards and outwards. In other words it rises. When bread is finally baked, the heat kills off the yeast, stops fermentation and the production of gas and the starch in the flour sets maintaining the risen structure and airy texture of the bread. Active yeast, when it is mixed into dough with warm liquid, is given all the basic life support it needs - food, moisture and warmth. Immediately feeding on the sugar in the mix or even on the starch in the flour the yeast multiplies. As it does this, carbon dioxide and alcohol are produced, and while the alcohol evaporates, carbon dioxide makes the bread rise. This process is called fermentation. The important thing about this whole process is to remember that yeast needs its life support system to work. Without optimum warmth, food and moisture it will not grow and the bread will not rise. Extremes of temperature will damage yeast - very cold conditions will make it inactive and very hot conditions will destroy it. The best temperature for yeast to reproduce is 25-28°C and in a moist environment.

Popular international breads

Baguette, Zopf, Ciabatta, Bap, Sourdough, Stollen etc.

16.2 Ingredients of Bread

16.2.1 Flour

Flour is a mixture of starch, protein, and other materials. The kinds of flours used are described as follows:

General-purpose flour is a mixture of hard and soft wheat flours. It is used to make cakes, cookies, quick breads, pastries, and pies. It does not have enough gluten strength to make satisfactory yeast bread and rolls. Bread flour is a blend of hard wheat flours. It contains more protein than general-purpose flour and has a slight granular texture. Good quality bread and other yeast-raised products can be made only with bread flour. Wheat base is prepared from the wheat germ, bran, and other fragments of wheat kernels. It has a whole-wheat flavor and may be combined with flour to produce whole wheat bread. In addition to the protein, flour contains various food elements such as carbohydrates, water, minerals, vitamins, enzymes, and fat.

16.2.1 Water

In many bakery products, including bread, the amount of water used is second only to the amount of flour. Water contains minerals. Water is necessary to form gluten from the protein of flour, thereby giving the dough its elasticity and its gas retaining property. Gluten absorbs twice its own weight of water. Water dissolves the salt and the sugar, makes it possible for the enzymes to act, and holds the yeast in suspension until it is added to the other ingredients and the fermentation begins.

16.2.2 Salt

Salt performs a very important function. Without salt, fermentation in dough is too rapid, and the baked product becomes too coarse. With too much salt, the fermentation process is slowed, and the bread becomes soggy. Salt strengthens gluten and helps it to expand, improves the color of baked products, and enhances the flavor.

16.2.3 Milk

Milk is almost a complete food. Nonfat dry milk contains all the food qualities of whole milk except fat. In bread production, nonfat dry milk style A should be used, as this milk is designed specifically for achieving volume, flavor, and crust characteristics desirable in yeast breads. Dry milk can be added by mixing or sifting the milk and flour together, or it can be reconstituted with part of the water in the bread recipe and added to the dough.

16.2.4 Eggs

Eggs are not used in making white bread but are used in making sweet doughs, cakes, and cookies. In baked products, eggs supply a high protein, mineral, and vitamin content. The yolks add color, the whites help bind other ingredients, and both combine to add flavor and moisture to the bread. Fresh eggs should be removed from the refrigerator and warmed to room temperature before they are used in dough. Frozen eggs should be completely defrosted before they are added to the dough and should be well mixed.

16.2.5 Leaving Agent

Baking powder is the chemical leavening agent used in quick breads. It is a double-acting baking powder in which one stage of leavening occurs in the batter and another occurs while the product is baking. The amount of baking powder used depends on the type of bakery product, the ingredients, and their proportions. Baking powder must be measured accurately. Too much baking powder produces a coarse grain and may cause the product to fall after being

taken out of the oven. If excessive baking powder is used, the color will be dark and yellowish and the taste will be salty or bitter. Too little baking powder will result in the structure being heavy and dense with low volume

16.2.6 Fat

General-purpose shortening compound is used in quick bread and batter production. Shortenings produce products with a soft crumb and aid in browning.

16.3 General Bread Making Procedures

16.3.1 Mixing

After selecting and weigh or measure the necessary ingredients, the next important step is mixing. Dough may be mixed by hand, but an electric mixer or a bread-dough machine will make the job easier.

Mixing Operation

The mixing operation accomplishes two functions. First, thorough mixing distributes the ingredients evenly. Secondly, it stretches the dough until the gluten is fully developed and distributed. In the early stages of the mixing process, water wets the flour and the dry ingredients. At this stage, the dough will be rather wet and lumpy. As the mixing progresses, the flour continues to take up liquid and the dough becomes moderately firm. As mixing continues, the dough begins to bond and becomes more elastic. The lumpiness disappears and the dough becomes firmer as the flour picks up more moisture. At this stage, the dough is rather sticky and sticks to the mixer bowl quite easily. Next, the dough becomes less sticky and more elastic. When this happens, the back of the bowl begins to be cleared of dough and eventually becomes completely clear. When the mixing process is completed, the temperature of the dough should range between 78°F and 82°F.

16.3.2 Fermentation or Proving

After the mixing operation, the dough is either left in the mixing bowl or placed in a dough trough to ferment. Fermentation is the chemical change that takes place when yeast (or other leavening agent) in the bread releases carbon dioxide gas, causing the dough to rise. The length of the fermentation period depends on the amount of yeast used, the strength of the flour, and the temperature during fermentation. Too much yeast and higher temperatures than, those designated, cause the dough to rise too fast.

16.3.3 Punching

Punching the dough after it rises develops the gluten and also redistributes the yeast cells. The temperature of the dough is equalized, and some of the carbon dioxide gas is forced out. Yeast dough is ready for punching when it is light and approximately double in size. To test the dough to determine if it is ready for punching, press the dough lightly with a fingertip. If the impression closes up immediately, the dough is not ready. If the impression recedes slightly, it is ready to be punched or folded.

16.3.4 Dough Make Up

The dough is divided into uniform pieces of the desired weight. This process is referred to as scaling. In a machine-operated bakery, the baker scales the pieces by machine, making adjustments so that the pieces will be the desired weight.

16.3.5 Rounding the Dough

After scaling, the dough is rounded by tucking the raw edges and forming a smooth round ball. This process seals the raw edges that are left after the dough is divided.

16.3.6 Intermediate Proofing

The intermediate proofing period is a stage when the rounded piece of dough is allowed to rest between the time it is divided and rounded and the time it is formed for panning. The intermediate proofing period should be just long enough for a piece of dough to recover from being divided and rounded, approx 10 to 15 minutes.

16.3.7 Moulding & Panning

The pieces of dough are shaped so that they can rise in the pan and form a shaped loaf of bread. After the dough is molded into a loaf, place it in a lightly greased pan. Each loaf should be placed so that the molding seam is on the bottom, and the loaf should be long enough to reach the ends of the pan.

16.3.8 Pan Proofing or Second Proving

After shaping and panning, loaves should be placed in a properly controlled room or cabinet called the proof box or proof cabinet for the final proof or pan proof. Temperature of the cabinet should be maintained at 90°F to 100°F. To determine whether the loaf is properly proofed, touch it lightly with one fingertip and press in slightly. If the impression made by the tip of the finger remains, the

loaf is proofed. If the imprint does not remain and fills out when the fingertip is removed, the loaf is still too compact and should be proofed more.

16.3.9 Baking

The final stage in bread production is to place the pans of dough in an oven that is heated to a temperature sufficient to heat the dough quickly (temperature specified on recipes) and to cause the carbon dioxide of the dough to expand, thereby greatly increasing the size of the dough. The oven temperature also vaporizes moisture on the surface of the bread and ultimately causes caramelization of the sugars, starches, and other ingredients that make up the exposed dough surface. A properly baked loaf of bread sounds hollow when tapped. Remove the baked loaves of bread from pans and cool on racks in areas free from drafts. Bread will dry out more quickly if the air is either too warm or too dry.

16.3.10 Cooling

After the bread is done, remove the loaves from the pans and place them on racks to cool, making sure there is at least a 1-inch space between loaves. Cooling usually takes from 1 1/2 to 2 hours. Bread should not be covered while it is warm.

16.3.11 Storing & Serving

Bread should be stored at cool room temperature under conditions where it will not dry out. If wrapped in plastic bags that are closed with twist ties, bread can be stored for up to 96 hours in a cool room. If the room is hot and humid, it may be necessary to store the bread under refrigeration to prevent mold from forming.

16.4 Quick Breads

Quick breads are batters that are leavened with baking soda or powder instead of yeast. They can be sweet or savory, and are wonderful additions to any meal. Quick breads include banana bread recipes, pineapple bread, apple bread, soda breads, date nut bread, and many more such as muffins, crumpets, scones etc.

16.5 Mixing Methods

All ingredients should be evenly mixed. If needed, the flour gluten should be developed to the desired degree to keep the loss of the leavening gas to a minimum during baking. These general rules apply to mixing quick breads and batters, regardless of which mixing method is chosen. The degree of mixing is always limited when the leavening is produced by baking powder.

16.5.1 Muffin - Mixing Method

This method is used for pancakes, muffins, corn bread, dumplings, and fritters. The sequence of steps for the muffin method includes sifting dry ingredients together, blending in the liquid and eggs, adding melted shortening, and mixing only until dry ingredients are moistened. Corn bread, muffin, and dumpling batters should appear lumpy.

16.5.2 Biscuit or Pastry Method

This means of combining ingredients is used principally for biscuits. This dough contains more flour than liquid and is of a kneaded consistency. The dough is prepared by sifting dry ingredients together, blending in the shortening, adding the liquid, and mixing only enough to yield a uniform structure. The dough is then cut into the desired shapes and baked.

16.6 Yeast - Raised Doughnuts

The doughnut formula is basically sweet dough; however, leavening and eggs are decreased and a combination of bread and general-purpose flours is used. A blend of general-purpose and bread flours produces a more tender texture and a shorter fermentation time than if all bread flour is used. Doughnut formulas contain different percentages of sugar, shortening, and eggs; the greater amount used, the richer the dough.

16.6.1 Mixing

Mixing temperature should be controlled so that the dough leaves the mixer at 78°F to 82°F. The temperature of ingredients when mixed has a definite effect on the amount of fat absorbed during frying. Mixing time should be limited to 10 minutes or until the dough is smooth and elastic.

16.6.2 Fermentation and Makeup

Mixed dough should be immediately divided into uniform pieces, the size of which depends on the weight of the entire batch being made up. Follow recipe instructions for rolling and cutting, as thickness of dough and uniformity of doughnut size are extremely important to proper frying. If there are cracks in the dough, or if it is stretched unnecessarily, the dough will tend to absorb a greater amount of fat during frying.

16.6.3 Cutting

Doughnut cutters should be used carefully to prevent overlapping the cuts and wasting the dough. Reworked and rerolled dough can be used, but will not give cut doughnuts a smooth surface or an even brown color. Doughnuts may

be cut into various shapes. Other than the characteristic round shape without centers, there are long johns, crullers, and beignets. Yeast-raised doughnuts are neither dispensed from a machine into frying fat nor mechanically cut because they require a short proofing period.

16.6.4 Frying

Recommended temperature of the fat is 375°F for raised doughnuts. Make certain the correct temperature is used because doughnuts will soak up fat that is too cool and will brown before they are done if fat is too hot. To allow for expansion of dough and turning room, place cut doughnuts carefully in fry baskets one-half inch apart and lower into hot fat.

16.6.5 Toppings

Toppings such as glazed nut, orange coconut, raisin, streusel, pecan, or praline toppings are added to sweet rolls or coffee cakes before baking.

16.7 Types of Bread

16.7.1 Whole - Meal Bread

Whole-meal bread contains higher concentrations of minerals and vitamins than white bread as it retains the bran and germ of the wheat. It is an excellent source of dietary fiber, containing twice that of white bread and more than multigrain breads.

16.7.2 Multigrain and Kibbled Bread

Mixed or multigrain breads are made from a mixture of whole meal, white or rye flour and may contain wheat germ, honey, gluten, non-fat milk solids, cracked and whole grains of wheat and other cereals such as rye, oats, corn, barley, rice millet and triticale.

16.7.3 Rye Breads

Rye bread is whole meal bread made from rye or a mix of rye and wheat flour. It was originally developed in Europe and is made in a wide variety of styles and shapes.

16.7.4 Fruit Bread

Fruit breads use a normal bread recipe to which fruit and often sugar are added. Popular fruits used are raisins, currants, dates, orange peel and dried fruits such as apricots. Hot cross buns, eaten at Easter, and many fruit breads,

also have spices added. Ingredients used to enhance appearance and flavor of breads includes cinnamon, nutmeg, eggs wash and sugar/water wash.

16.7.5 Croissants

Acroissant is a buttery flaky pastry, named for its distinctive crescent shape, commonly had during breakfast. Croissants are made of a leavened variant of puff pastry by layering yeast dough with butter and rolling and folding a few times in succession, then rolling. Everybody thinks the French invented croissants, but it was in Budapest in 1686 that the first croissant was born.

16.7.6 Danish Pastry

Danish pastry, usually referred to as Danish in North America, is a sweet pastry which has become a specialty of Denmark and is popular throughout the industrialized world, although the form it takes can differ significantly from country to country. The ingredients include flour, yeast, milk, eggs, and generous amounts of butter. Yeast dough is rolled out thinly, coated with butter, and then folded into numerous layers. If necessary, the dough is chilled to ease handling. The rolling, buttering, folding, and chilling is repeated several times to create a dough which is buttery and flaky. In the UK, various ingredients such as jam, custard, apricots, raisins, flaked almonds, pecans or caramelized toffee are placed on or within sections of divided dough, which is then baked. Cardamom is often added to increase the aromatic sense of sweetness. Both, the croissant and Danish are laminated doughs.

Conclusion

Breads have become an important part of the Indian menu; it is being used by almost every household. Readymade breads are easily available in almost all the neighborhood shops. A common name for bread used in India is 'double-roti'.

Key Terms

Leavening agents	Moulding	Muffin
Croissants	Danish pastry	Punching
Rounding	Proofing	Panning Pan proofing

Summary

History and science of bread making is very ancient. The ingredients have been mixed in many different combinations for bringing out the right color, flavor, texture and taste. The primary ingredients of bread are Flour, Water, Salt, Milk,

Eggs, Leavening agents and fat. Bread making procedure has a common set of rules. The process involves Mixing, fermentation or proving of the mixed dough, punching it back to release the built up carbon released during the process of fermentation. The dough is made up again, rounding of dough is done where it is cut equally, Intermediate Proofing is required again where the dough is allowed to rise again, moulding and panning is done subsequently especially breads are put into containers whose shape the final bread is required to take, the dough put in pans is always lesser than the actual size to permit it to increase in size. Pan Proofing or Second Proving happens where the dough is left to increase in volume due to fermentation again. The bread is finally baked and left to cool on wire racks before packing. Storing is equally essential to maintain the longevity of breads.

Mixing methods also dictates the final product; the two methods are Muffin-mixing method, Biscuit or pastry method. Yeast-raised doughnuts are very popular among Americans, they are available in many varieties, such as chocolate doughnuts, spice doughnuts etc. The doughnut making procedure is almost similar to bread making, it involves Mixing, Fermentation and makeup, Cutting, Frying and finally the delicious range of toppings.

Types of breads are Whole meal bread, Multigrain and kibbled bread, Rye breads, Fruit breads, Croissants and Danish pastry

Questions

1. What are the different types of flours used in bread making today?
2. Explain the role of salt in bread making.
3. What are the natural and chemical agents used for leavening in bread making?
4. Explain dough makeup?
5. What do you understand by intermediate proofing? Explain the procedure.
6. What is muffin – mixing method?
7. Explain
 - a. Rye breads
 - b. Croissants
 - c. Danish Pastry