

Министерство науки и высшего образования Российской Федерации
Федеральное государственное бюджетное образовательное учреждение
высшего образования
«Владимирский государственный университет
имени Александра Григорьевича и Николая Григорьевича Столетовых»

Н. К. ЯШИНА

FOOD TECHNOLOGY

Учебно-практическое пособие по обучению чтению
на английском языке



Владимир 2020

УДК 811.111
ББК 81.2 (англ)
Я96

Рецензенты:

Кандидат филологических наук
доцент кафедры современного образования
Российского университета кооперации (Владимирский филиал)
С. В. Бузина

Кандидат педагогических наук
доцент кафедры русской и зарубежной филологии
Владимирского государственного университета
имени Александра Григорьевича и Николая Григорьевича Столетовых
В. И. Горбатов

Издается по решению редакционно-издательского совета ВлГУ

Яшина, Н. К.

Я96 Food Technology : учеб.-прак. пособие по обучению чтению на англ. яз. / Н. К. Яшина ; Владим. гос. ун-т им. А. Г. и Н. Г. Столетовых. – Владимир : Изд-во ВлГУ, 2020. – 104 с.
ISBN 978-5-9984-1145-8

Посвящено различным проблемам технологии производства продуктов питания: составу пищевых продуктов, способам их производства и хранения, необходимому для производства продуктов питания оборудованию, а также профессиональным навыкам персонала. Цель пособия – подготовить обучающихся к чтению оригинальной литературы по данной теме.

Предназначено для студентов направления подготовки 19.03.02 – Продукты питания из растительного сырья.

Рекомендовано для формирования профессиональных компетенций в соответствии с ФГОС ВО.

Библиогр.: 6 назв.

УДК 811.111
ББК 81.2 (англ)

ISBN 978-5-9984-1145-8

© ВлГУ, 2020

PREFACE

Цель пособия – подготовить студентов к чтению оригинальной литературы по специальности.

Пособие построено по тематическому принципу и включает следующие темы: состав пищевых продуктов, их переработка; оборудование и персонал, необходимые для производства; способы хранения и др.

В пособии использована оригинальная зарубежная литература. Аутентичные тексты подобраны с учетом их познавательной ценности, актуальности и воспитательного значения. Они информативны и отражают современные тенденции в области технологии производства высококачественных продуктов питания растительного происхождения.

Пособие состоит из 19 модулей. Каждый модуль содержит тематический список активной лексики, предтекстовые и послетекстовые упражнения на понимание прочитанного.

Раздел «Supplementary Reading» включает тексты по основам хлебопечения и изготовления рыбных продуктов для внеаудиторного чтения.

Unit I

OPTIMIZATION OF INDUSTRIAL FOOD PROCESSING

I. Remember the following words and word combinations from the text:

- | | |
|-----------------------------|---|
| 1) affordable | 1) доступный (по цене) |
| 2) agriculture | 2) земледелие, сельское хозяйство |
| 3) appearance | 3) внешний вид |
| 4) composition | 4) состав |
| 5) digestible | 5) перевариваемый |
| 6) fishing | 6) рыболовный промысел |
| 7) food preservation | 7) сохранение, консервирование
пищевых продуктов |
| 8) food processing | 8) технология пищевых продуктов |
| 9) food process engineering | 9) техника обработки пищевых
продуктов |
| 10) food science | 10) наука о пищевых продуктах |
| 11) involve | 11) включать, вовлекать |
| 12) nutritive value | 12) питательная ценность |
| 13) palatable | 13) вкусный |
| 14) poisoning | 14) отравление |
| 15) prevent | 15) предотвращать, препятствовать |
| 16) replace | 16) заменять, замещать |
| 17) safe | 17) безвредный |
| 18) safety | 18) безвредность, безопасность |
| 19) species | 19) вид, разновидность |
| 20) spoilage | 20) порча |
| 21) storage | 21) хранение, хранилище |
| 22) technique | 22) метод, способ, технический прием |
| 23) undesirable | 23) нежелательный |

II. Give the Russian equivalents for the following English words and word combinations:

storage of food, automated production methods, safe food, to be of importance, agricultural producers, nutritive value, food chemistry, composition of food, the study of microorganisms.

III. Find English equivalents for the following Russian words and word combinations in the right column:

- | | |
|--|-------------------------------------|
| 1) порча продуктов | 1) appearance of the product |
| 2) пищевик-технолог | 2) physical and chemical changes |
| 3) производители сельскохозяйственной продукции | 3) products storage |
| 4) полезные материалы | 4) industrial food processing |
| 5) внешний вид продукта | 5) synthetic packing materials |
| 6) физические и химические изменения | 6) food-technologist |
| 7) химический состав продуктов питания | 7) agricultural food producers |
| 8) промышленная обработка продуктов питания | 8) beneficial materials |
| 9) хранение продуктов | 9) chemical composition of products |
| 10) синтетические материалы для упаковки продуктов | 10) products spoilage |

IV. Translate the following sentences paying attention to the modal verbs and their equivalents.

1. A food technologist must have a broad knowledge of scientific and engineering principles.

2. An understanding of the chemical nature of food is essential if one is to achieve an understanding of the composition of food.

3. The biological changes must be carefully considered in addition to physical and chemical changes.

4. Engineer-technologists must be acquainted with the basic equipment in the manufacture of any particular processed food.

5. The growth of microorganisms can be prevented if one understands the principles of food preservation.

V. Read the text below carefully to find out basic purposes of food processing.

Text

OPTIMIZATION OF FOOD PROCESSING

Every food in an industrialized society relies not only on agriculture, horticulture and fishing but also on efficient food processing. Since the origin of civilization man has always processed food, and the basic



purposes of food processing have remained unchanged. The first purpose is the conversion of agricultural products into palatable attractive, digestible and safe foods. The second purpose is the preservation of foods for availability out of season, and for transportation to areas distant from agricultural

producers. Now quality, safety and stability are in the foreground, the improvement of taste, appearance and nutritive value being also of great importance.

A wider range of attractive food products has become affordable through advances in food science, food technology and food process engineering together with the development of a wide range of highly efficient processing equipment and new synthetic packing materials. Many traditional processes have now been replaced by automated production methods and a lot of modern process control systems have been introduced.

Food process engineering is concerned, on the one hand, with the mechanical and physical operations involved in food processing and on the other hand – with machines and equipment in which physical, chemical and biological conversions in food materials are performed during processing.

Food science involves the study of all aspects of science related to food, food chemistry, biochemistry and microbiology being the most important ones. An understanding of the chemical nature and properties of food is essential if one is to achieve an understanding of the composition of food and the reactions which take place during its storage and processing. The biological changes occurring in the industrial processing of food are also of great importance. They must be carefully considered and analyzed in addition to the chemical and physical changes.

Microbiology is the study of microorganisms. Some species of microorganisms are beneficial and are used extensively in food production. Other types are responsible for many undesirable effects in food, such as spoilage and poisoning. A knowledge of the nature of microorganisms, their growth requirements and how the growth can be prevented is necessary if one wants to understand the principles involved in the various methods of food preservation.

Consequently, a food technologist must have a broad knowledge of scientific and engineering principles. He must be acquainted with the composition of food, its chemical nature, physical, chemical and biological changes occurring in food, and also with basic equipment, operations and processes involved in the manufacture of any particular processed food.

VI. Answer the following questions about the text.

1. What does everyday food rely on?
2. What are the basic purposes of processing food?
3. What have traditional methods of food processing been replaced by?
4. What does food science involve?
5. What knowledge is essential for understanding the composition of food?
6. What is microbiology?
7. Is it necessary to know the nature of microorganisms?
8. What knowledge must a food technologist have?

VII. Think and say about:

- 1) purposes of food processing;
- 2) food processing engineering;
- 3) food science;
- 4) microbiology as a science.

Unit II

COMPOSITION OF FOOD

I. Remember the following words and word combinations from the text:

- | | |
|--------------------------------------|---|
| 1) carbohydrate | 1) углевод |
| 2) constituent | 2) составная часть, элемент |
| 3) to consume food | 3) потреблять продукты (пищу) |
| 4) diet | 4) питание, рацион питания |
| 5) edible | 5) съедобный, годный в пищу |
| 6) excessive | 6) избыточный |
| 7) repair of body tissues | 7) улучшение (восстановление) тканей организма |
| 8) composition of food | 8) состав пищи |
| 9) fat | 9) жир |
| 10) flour | 10) мука |
| 11) to furnish the building material | 11) предоставлять (доставлять) строительный материал |
| 12) energy intake | 12) потребление энергии |
| 13) vehicle for transporting food | 13) транспортное средство для перевозки продуктов питания |
| 14) lack | 14) отсутствие, недостаток, нужда |
| 15) malnutrition | 15) недостаточное, неправильное питание |
| 16) mixture of substances | 16) смесь веществ |
| 17) nutrient | 17) питательное вещество |
| 18) nutritionist | 18) диетолог |
| 19) to oxidize | 19) окислять |
| 20) property | 20) свойство |
| 21) protein | 21) белок |
| 22) waste products | 22) отходы |
| 23) retention of nutrients | 23) сохранение питательных веществ |

II. Give the Russian equivalents for the following English words and word combinations:

to provide energy, to support body activity, to furnish the building material, food technologist, mixture of substances, to perform specific function, constituents of food, to regulate body temperature, to be widely distributed in nature, to insure optimum health fullness.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|------------------------------------|------------------------------------|
| 1) рост тканей | 1) to regulate body temperature |
| 2) ответственность диетолога | 2) to supply nutrients |
| 3) чрезмерное потребление жиров | 3) protein sources |
| 4) переварить пищу | 4) the nutritionist responsibility |
| 5) недостаток витаминов | 5) energy intake |
| 6) регулировать температуру тела | 6) malnutrition |
| 7) источники белка | 7) amino acids |
| 8) неправильное питание | 8) replacement of tissues |
| 9) поставлять питательные вещества | 9) to digest food |
| 10) замена тканей | 10) lack of vitamins |
| 11) пищевые продукты | 11) the growth tissue |
| 12) потребление энергии | 12) excessive fats consumption |
| 13) аминокислоты | 13) foodstuffs |

IV. Translate the following sentences with the Passive Voice into Russian.

1. The word food is used to designate anything edible.
2. One should be well acquainted with the composition of food, its properties and utilization by the human body.
3. The essential constituents of food can be classified into six groups.
4. Proteins, fats and carbohydrates are used for providing energy to support body activity.
5. A diet should be balanced.
6. Malnutrition may be caused by a lack of some nutrients in the diet.

V. Read the text below carefully to find out the ingredients composing food.

Text

COMPOSITION OF FOOD

Food is known to be necessary for any human being or any form of life. Food has three chief functions. First, it serves as fuel for the body, providing energy to support body activity; second, it furnishes the building material for formation, growth, maintenance and repair of body tissues; and third, it provides the regulation of the body processes.

The word «food» is used to designate anything edible whether it is a natural product such as meat, eggs, milk, apples; a partially processed product such as flour or cooked foods such as bread or cakes. But scientifically speaking, foods are not so much substances that we eat as substances that supply certain nutrients when eaten. That is why the nutritionists use the word «foodstuffs» for those portions of foods the body can use, mainly the proteins, fats and carbohydrates.



To be a highly qualified food engineer or food technologist one should be well acquainted with the composition of food, its properties and the utilization of food by the human body. As it was mentioned above, nearly all foods are mixtures of substances known as nutrients. Each nutrient has particular type of chemical composition and performs at least one specific function when it is digested and absorbed in the body.

The essential constituents of food can be classified into six groups: proteins, fats, carbohydrates, vitamins, minerals and water. Proteins, fats and carbohydrates are used for providing energy to support body activity. They are also required for formation, growth and replacement of tissues. Vitamins and mineral elements are necessary to regulate body processes, some of them being used for growth and replacement of tissues.

Water serves as a vehicle for transporting food and waste products. It assists in regulating body temperature and takes part in many chemical reactions.

A well balanced diet is necessary for the maintenance of good health. This means that the food a person consumes should be planned to provide adequate amounts of the essential nutrients together with an adequate, but not excessive, energy intake. If a diet is not balanced, malnutrition takes place. Malnutrition may be caused by a lack of one or more of the essential nutrients in the diet. About four dozen compounds and elements must be supplied daily by the diet. Certain of these are more widely distributed in nature and to a greater extent than others. The problem of selecting those foods which will insure a proper intake of all essentials is basically the responsibility of the nutritionist. The food technologist is responsible for the development of the process which will provide maximum retention of all the nutrients necessary to insure optimum healthfulness of the product.

VI. Answer the following questions about the text.

1. Why is food necessary for any human being?
2. What does the word «food» designate?
3. What must a food technologist be acquainted with relating food?
4. What constitutes can food be classified into?
5. What are proteins, fats and carbohydrates used for in food?
6. Why are vitamins and mineral elements necessary in food?
7. What is a well balanced diet necessary for?
8. What is malnutrition caused by?
9. What is the responsibility of nutritionist?

VII. Think and say about:

- 1) the role of food for the human body;
- 2) the constituents food consists of;
- 3) the necessity of a well-balanced diet;
- 4) causes of malnutrition.

Unit III

PROTEINS, FATS AND CARBOHYDRATES

I. Remember the following words and word combinations from the text:

- | | |
|-----------------------------|-----------------------------------|
| 1) animal source | 1) животное происхождение |
| 2) plant source | 2) растительное происхождение |
| 3) cereals | 3) хлебный злак, крупа |
| 4) soy beans | 4) соевые бобы |
| 5) high proteins content | 5) высокое содержание белков |
| 6) to have advantage | 6) обладать преимуществом |
| 7) hydrolytic enzymes | 7) гидролитические ферменты |
| 8) antibodies | 8) антитела |
| 9) dairy products | 9) молочные продукты |
| 10) seafood | 10) морепродукты |
| 11) walnuts | 11) грецкие орехи |
| 12) primary energy sources | 12) изначальные источники энергии |
| 13) energy reserve | 13) запас энергии |
| 14) physical damage | 14) физическое повреждение |
| 15) adipose tissue | 15) ткань животного жира |
| 16) fat-soluble vitamins | 16) жирорастворимые витамины |
| 17) to accomplish functions | 17) выполнять функции |
| 18) to break down reaction | 18) разрывать реакцию |
| 19) to release energy | 19) выделять энергию |
| 20) to store | 20) накапливать, хранить |
| 21) legume | 21) плод бобовых, боб |

II. Give the Russian equivalents for the following English words and word combinations:

human diet, to obtain foods from animals, complex organic substances, to contain little quantity of fat, to contribute, to diet, primary energy sources, rich sources of carbohydrates, formation of enzymes, physical damage, to break down reactions.

III. Find the English equivalents for the Russian words and word combinations in the right column:

- | | |
|---|---------------------------------|
| 1) сложные органические вещества | 1) to maintain body temperature |
| 2) поддерживать температуру тела | 2) replacement of body cells |
| 3) вещества растительного происхождения | 3) rich sources of proteins |
| 4) замена клеток организма человека | 4) to perform some functions |
| 5) жирорастворимые витамины | 5) to contain carbon |
| 6) образование антител | 6) excess of carbohydrates |
| 7) богатые источники белков | 7) to release energy |
| 8) выполнять ряд функций | 8) blood stream |
| 9) содержать углерод | 9) formation of anti-bodies |
| 10) избыток углеводов | 10) fat-soluble vitamins |
| 11) поток крови | 11) plant materials |
| 12) выделять энергию | 12) complex organic substances |

IV. Translate the following sentences paying attention to Participle I, II.

1. Vegetable proteins have the advantage of being cheaper than animal proteins.

2. Proteins are complex organic substances containing the following elements: carbon, hydrogen and oxygen.

3. In general, foods obtained from animals contain more protein than foods obtained from plants.

4. Fat stored in the adipose around delicate organs such as the kidneys protects them from physical damage.

5. Fats supply a major portion of man's energy giving more than twice as much energy as proteins and carbohydrates.

V. Read the text below carefully to find out the origin of proteins, fats and carbohydrates in food.

Text

PROTEINS, FATS AND CARBOHYDRATES

Proteins, fats and carbohydrates are known to be the most essential nutrients in the diet. Proteins in human diet can be obtained from both animal and vegetable sources, the most important being meat, eggs, fish,



cereals, legumes, seeds and nuts. In general, foods obtained from animals contain more protein than foods obtained from plants, although some vegetable materials such as soya beans have a high protein content. Vegetable proteins have the advantage of being cheaper than animal proteins.

Proteins are complex organic substances, containing the elements: carbon, hydrogen and oxygen. All proteins also contain nitrogen and some contain sulphur and phosphorus. When foods are eaten the proteins are digested by hydrolytic enzymes and are absorbed into the bloodstream as amino acids. These amino acids are used in the synthesis of new proteins needed for energy, growth, maintenance and replacement of body cells, the latter occurring in all people at all stages of their life. Besides, proteins are necessary for the formation of enzymes, antibodies and some hormones.

Fats are also the necessary component of living tissues and essential in human nutrition. They supply a major portion of man's energy, giving more than twice as much energy as proteins and carbohydrates. The natural foods which contribute the largest amounts of fats to our diet are the animal products – meats, dairy products, eggs, fish and seafood.

Fruits and vegetables contain little quantity of fat (between 0.1 and 1 per cent). But some of them are rich sources of fats. Thus, a ripe olive contains about 20 % of fat. Nuts are very rich in fat. Walnuts, for example, have about 64 % of fat.

Fats in the diet accomplish numerous functions. They are primary energy sources. Excess fat is stored in the adipose tissue where it has three functions: a) it constitutes an energy reserve; b) it forms an insulating layer under skin and maintains a constant body temperature; c) fat stored in the adipose tissue around delicate organs such as the kidneys protects them from physical damage. Fats are also solvents for the fat-soluble vitamins (A, D, E and K) that are introduced in the diet in the fatty portion of the food.

Carbohydrates are also of great importance for human nutrition. They supply a major portion of man's energy and are primarily derived from plant materials, e.g. cereals, vegetables and fruits. These substances accomplish a number of functions in the body. They are oxidized in the cells, are broken down in a series of reactions and energy is released when this takes place. Any excess of carbohydrates is converted into fat that is stored mainly in the liver and all over the body.

VI. Answer the following questions about the text.

1. What are the most essential nutrients in the diet?
2. How can proteins be obtained in human diet?
3. What kind of substances are proteins?
4. What substances do they contain?
5. What is the function of amino acids in food?
6. Why are fats the necessary components of living tissues?
7. What is their role?
8. What do carbohydrates supply to human body?

VII. Think and say about:

- 1) substances as essential nutrients in the diet;
- 2) the function of proteins in all stages of one's life;
- 3) fats and their role in supplying man's energy;
- 4) the importance of carbohydrates for human nutrition.

Unit IV

VITAMINS, MINERALS AND WATER

I. Remember the following words and word combinations from the text:

- | | |
|------------------------------------|--|
| 1) organic compounds | 1) органические соединения |
| 2) to satisfy human requirements | 2) удовлетворять потребности человека |
| 3) solubility characteristics | 3) характерные особенности растворимости |
| 4) fat soluble vitamins | 4) витамины, растворимые жиры |
| 5) dietary fats | 5) пищевые жиры |
| 6) to dissolve | 6) растворяться |
| 7) to store | 7) накапливаться |
| 8) day-to-day supply | 8) повседневные запасы |
| 9) to take out excess | 9) выводить избыток |
| 10) virtually | 10) в сущности, фактически |
| 11) constituents of proteins | 11) компоненты, вещества, составляющие белки |
| 12) to account for | 12) объяснять |
| 13) nutritional point of view | 13) с питательной точки зрения |
| 14) trace amounts | 14) небольшие количества |
| 15) body fluids | 15) жидкости (жидкая среда) в организме |
| 16) formation of bones | 16) формирование костей |
| 17) catalysts in enzymic processes | 17) катализаторы в ферментных процессах |
| 18) to disperse | 18) распространять, рассеивать |
| 19) means of transport | 19) средства транспортировки |
| 20) to oxidize | 20) окислять |
| 21) food intake | 21) прием пищи |

II. Give the Russian equivalents for to the following English words and word combinations:

to be oxidized in cells, to release energy, day-to-day supply, to carry nutrients, to survive without water, to form carbon dioxide, variety of food, to satisfy human requirements, water-soluble vitamins, to be stored in the liver, to control the body fluids.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|---|-----------------------------------|
| 1) выводить избыток жиров | 1) essential mineral elements |
| 2) содержать витамины | 2) main enzymic processes |
| 3) характеристики растворимости | 3) diet constituents |
| 4) витамины, растворимые жиры | 4) to maintain life |
| 5) важные элементы минералов | 5) to take out fats |
| 6) основные энзимные процессы | 6) to contain vitamins |
| 7) вес тела | 7) to provide medium for survival |
| 8) обеспечивать среду для выживания | 8) solubility characteristics |
| 9) поддерживать жизнь | 9) fats-soluble vitamins |
| 10) компоненты, составляющие диету человека | 10) body weight |

IV. Translate the following sentences into Russian. Define the tenses.

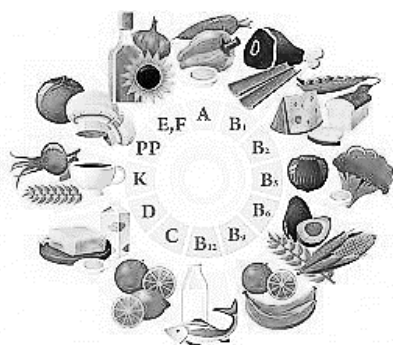
1. Vitamins are found in varying quantities in food.
2. Traditionally the vitamins have been divided into two groups on the basis of their solubility characteristics.
3. The mineral elements are present in food mostly in the form of inorganic salts.
4. All the elements of the Periodic Table have been found in living cells.
5. Human body can only survive a few days without water.

V. Read the text below carefully to find out the role of vitamins, minerals and water in food.

Text

VITAMINS, MINERALS AND WATER

The vitamins are a group of organic compounds, differing greatly in chemical composition, which play essential catalytic role in the normal metabolism of other nutrients. They cannot be synthesized by the body and have to be obtained from diet. Because their role is primarily catalytic in



contrast to the proteins, fats and carbohydrates, vitamins are required in relatively small quantities. They are found in varying quantities in a wide variety of foods, but no single food is likely to contain them all in sufficient quantities to satisfy human requirements under normal conditions of food intake.

Traditionally the vitamins have been divided into two groups on the basis of their solubility characteristics: fat-soluble vitamins and water-soluble vitamins. Fat-soluble vitamins (A, D, B and K) are absorbed along with dietary fat. They dissolve in fats and tend to be stored in the body (in the liver), a person having these reserves being not absolutely dependent on their day-to-day supply in diet. In contrast, water-soluble vitamins (B and C) are not normally stored in appreciable amount in the body and any excess is taken out.

All forms of living matter are known to require many minerals for their life processes. Virtually all the elements of the Periodic Table have been found in living cells. The mineral elements are present in food mostly in the form of inorganic salts, e.g. sulfur and phosphorus are constituents of many proteins. Milk and milk products, fish, eggs, vegetables and fruit prove to be the most important sources of minerals in the human diet.

Minerals account for approximately 4 % of body weight. From nutritional point of view calcium, sodium, phosphorus, potassium, magnesium, chlorine and sulfur are the most important mineral elements being required in relatively large amounts. Some elements such as iron, copper, manganese, zinc, iodine, fluorine are necessary in trace amounts.

Minerals in human nutrition are involved in the control of body fluids, in chemical reactions and in the building of rigid structures to support the body. For example, calcium and phosphorus are used in the formation of bones and teeth. Sodium, potassium, magnesium serve purposes of controlling body fluids. Many elements act alone or in conjunction with others as catalysts for essential enzymic processes in the body.

Water accounts for half of total body weight and without it the body cannot function and survive. Water is essential for it provides a medium in which nutrients, enzymes and other chemical substances can be dispersed and in which the chemical reactions necessary for maintaining life can take place. It is also necessary as a means of transport within the body. Nutrients are carried to cells and waste products are transported from cells by blood plasma which is 90 % of water.

It is possible for the human body to exist for several weeks without food, but it can only survive a few days without water. Water is taken into the body not only in foods and drinks, but it is formed also within the body by chemical reactions. When nutrients are oxidized in the cell in order to release energy, carbon dioxide and water are formed.

VI. Answer the following questions about the text.

1. What kind of substances are vitamins?
2. Where are vitamins come to human body from?
3. What groups are vitamins divided into?
4. What products are very rich of minerals?
5. What is the role of minerals in the human body?
6. Where are calcium and phosphorus used?
7. How many percent does water account for in human organism?
8. Why is water very important in human body?
9. Can human body exist without food and water?

VII. Think and say about:

- 1) the role of vitamins in the human organism;
- 2) groups the vitamins are divided into;
- 3) minerals in human nutrition;
- 4) water as a means of transport within a body.

Unit V

FOOD PREPARATION

I. Remember the following words and word combinations from the text:

- | | |
|---|---|
| 1) food preparation | 1) приготовление пищи |
| 2) suitable utensils | 2) подходящая посуда |
| 3) prior to use | 3) перед использованием |
| 4) to prevent cross contamination | 4) для предотвращения перекрестного загрязнения |
| 5) raw fruits | 5) сырые фрукты |
| 6) raw vegetables | 6) сырые овощи |
| 7) thoroughly | 7) тщательно, совершенно, до конца |
| 8) hazardous food | 8) опасная пища |
| 9) poultry stuffings | 9) фарш из мяса птицы |
| 10) interruption | 10) перебой, прерывание |
| 11) cooking process | 11) процесс приготовления |
| 12) pork products | 12) продукты из свинины |
| 13) to roast beef | 13) жарить говядину |
| 14) dry heat oven | 14) печь сухого нагрева |
| 15) to protect food | 15) защищать пищевые продукты |
| 16) to subject to potential contamination | 16) подвергаться возможному загрязнению |
| 17) improper procedure | 17) неправильный технологический процесс |
| 18) pathogenic microorganisms | 18) патогенные микроорганизмы |
| 19) proper sanitary procedures | 19) надлежащий санитарный технологический процесс |
| 20) use of adequate facilities | 20) использование адекватных средств |
| 21) to be safe for human consumption | 21) быть безопасным для потребления человеком |
| 22) to comply with laws | 22) соблюдать законы |
| 23) food labeling | 23) маркировка продуктов питания |
| 24) food processing establishment | 24) пищевое предприятие |

II. Give the Russian equivalents for the following English words and word combinations:

to cook food in microwave oven, roast beef, suitable utensils, hazardous food, to heat all parts of food, food establishment, proper sanitary procedure, free from spoilage, to be subjected to potential contamination, progressive growth of microorganisms.

III. Find the English equivalents for the Russian words and word combinations in the right column:

- | | |
|--|-------------------------------------|
| 1) опасная пища | 1) poultry stuffings |
| 2) печь сухого нагрева | 2) to wash hands thoroughly |
| 3) неправильный технологический процесс | 3) use of adequate facilities |
| 4) использование адекватных средств | 4) preparation of food |
| 5) фарш из мяса птицы | 5) to be safe for human consumption |
| 6) перед использованием | 6) pathogenic microorganisms |
| 7) тщательно мыть руки | 7) improper procedure |
| 8) патогенные микроорганизмы | 8) dry heat oven |
| 9) быть безопасным для потребления человеком | 9) hazardous food |
| 10) приготовление пищи | 10) prior to use |

IV. Translate the following sentences paying attention to the Passive Voice.

1. Food shall be obtained from sources that comply with all laws relating to food and food labeling.

2. Food shall be prepared with at least possible manual contact.

3. Pork products shall be cooked to heat all parts of the food to at 150 °F.

4. Raw fruits and vegetables shall be thoroughly washed with potable water before being served.

5. Food preparation is the process during which food is protected from many sources within the establishment.

V. Read the text below carefully to find out technology of food preparation.

Text

FOOD PREPARATION

Food shall in sound condition, be free from spoilage, filth, and other contamination and shall be safe for human consumption. Food shall be obtained from sources that comply with all laws relating to food and food labeling. Use of home prepared or hermetically sealed food which has been processed in a place rather than a food processing establishment is prohibited.

Food preparation is the process during which food is at least protected due to necessary manipulation and is subjected to potential contamination from many sources within the establishment. Once the food has been contaminated, improper procedures for cooking, reheating or cooking permit the survival as well as rapid and progressive growth of pathogenic microorganisms. Without adherence to proper sanitary procedures and the maximum use of adequate utensils and facilities, the preparation of a sound, appealing food is impossible.



Food shall be prepared with at least possible manual contact, with suitable utensils and on surfaces that prior to use have been cleaned, rinsed and sanitized to prevent cross contamination.

Raw fruits and raw vegetables shall be thoroughly washed with potable water before being cooked or served.

Potentially hazardous foods requiring cooking shall be cooked to heat all parts of the food to a temperature of at least 140 °F except:

- a) poultry, poultry stuffings shall be cooked to heat all parts of the food to at least 165 °F with no interruption of the cooking process;
- b) pork and pork products shall be cooked to heat all parts of the food to at least 150 °F, or, if cooked in a microwave oven, to at least 170 °F;

c) when beef roasts under 10 pounds in weight are cooked in a still dry heat oven, the oven shall be preheated to and held at an air temperature of at least 350 °F throughout the process;

d) when beef roasts of 10 pounds or over in weight are cooked in a dry heat oven, the oven should be preheated to and held at an air temperature of at least 250 °F throughout the process.

VI. Answer the following questions about the text.

1. In what case has the food been contaminated?
2. Is it possible to prepare sound food without adherence to proper sanitary procedures?
3. When shall food be safe for human consumption?
4. Is the use of home prepared food prohibited? And why?
5. How shall food be prepared?
6. What shall be done with raw fruits and vegetables before being served?
7. How shall poultry stuffings be cooked?
8. What about pork products?

VII. Think and say about:

- 1) process of food cooking;
- 2) methods of food preparation;
- 3) requirements of cooking raw fruit and vegetables, poultry stuffings, pork or beef products.

Unit VI

EQUIPMENT AND UTENSILS

I. Remember the following words and word combinations from the text:

- | | |
|---------------------------------|---|
| 1) multi-use equipment | 1) многофункциональное оборудование |
| 2) non-toxic materials | 2) нетоксичные материалы |
| 3) single-service articles | 3) продукт с оказанием разовой услуги |
| 4) soft solder | 4) мягкий припой |
| 5) to be corrosion resistant | 5) быть устойчивым к коррозии |
| 6) chopsticks | 6) палочки для еды |
| 7) stirrers | 7) мешалки |
| 8) safe rubber like materials | 8) безопасные резиноподобные материалы |
| 9) scratching | 9) царапание поверхности |
| 10) dishwashing methods | 10) способы мытья посуды |
| 11) prohibited food additives | 11) запрещенные пищевые добавки |
| 12) to migrate into food | 12) попадать в пищу |
| 13) ventilation hoods | 13) вытяжка |
| 14) food-contact surfaces | 14) поверхности, контактирующие с пищевыми продуктами |
| 15) grease extracting equipment | 15) оборудование для удаления жира |
| 16) ice makers | 16) льдогенераторы |
| 17) table-mounted equipment | 17) настольное оборудование |
| 18) smooth masonry | 18) гладкая кладка |
| 19) to meet the requirements | 19) удовлетворять потребности |
| 20) pallets | 20) поддоны |
| 21) to eliminate soil building | 21) устранять загрязнение почвы |
| 22) rodent harborage | 22) приют для грызунов |

II. Give the Russian equivalents for the following English words and word combinations:

to be corrosion resistant, non-toxic materials, ice-cream spoons, single-service articles, safe plastic materials, poor durability, food-contact surfaces, ice storage equipment, ventilation hoods, floor mounted equipment, smooth masonry.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|--|-------------------------------------|
| 1) царапание поверхности | 1) grease extracting equipment |
| 2) палочки для еды | 2) to be composed of safe materials |
| 3) попадать в пищу | 3) to meet the requirements |
| 4) способы мытья посуды | 4) food-contact surfaces |
| 5) поверхности,
контактирующие
с пищевыми продуктами | 5) ice-makers |
| 6) оборудование
для удаления жира | 6) to migrate into food |
| 7) льдогенераторы | 7) chopsticks |
| 8) удовлетворять потребности | 8) table-mounted equipment |
| 9) состоять из безопасных
материалов | 9) dishwashing methods |
| 10) настольное оборудование | 10) scratching |

IV. Translate the following sentences. Define the types of subordinate clauses.

1. For example, if soft solder is used it shall be composed of safe materials.

2. Safe plastic materials that are resistant to scratching and distortion permit cleaning by normal dishwashing methods.

3. Grease extracting equipment shall be readily removable for cleaning if not designed to be cleaned in place.

4. Floor-mounted equipment shall be to the floor in a way that meets all the requirements for floor clearance.

5. The proper installation of the equipment reduces the probability of the equipment interfaces to be potential factors in food contamination since they are easily accessible for thorough cleaning.

and equipment and shall be installed to facilitate the cleaning of the equipment and adjacent areas. Portable equipment is small and light enough to be moved easily by one person and it has no utility connection.

Floor-mounted equipment shall be sealed to the floor or installed on raised platforms of concrete or other smooth masonry in a way that meets all the requirements for ceiling or floor clearance.

All easily removable storage equipment such as pallets, racks and dollies shall be positioned to provide accessibility to working areas.

The proper installation and location of equipment reduces the probability of equipment interfaces and adjacent surfaces being potential factors in food contamination by eliminating soil buildup and insect or rodent harborage since these interfaces and surfaces are either easily accessible for thorough cleaning or are sealed to adjoining surfaces to prevent the accumulation of soil.

VI. Answer the following questions about the text.

1. How shall multi-use equipment be made?
2. Shall single service article contribute to contamination of food?
3. Single-service articles shall impart odors, color or taste, shan't they?
4. What will product surfaces of equipment represent?
5. How is table-mounted equipment placed?
6. In what way shall the floor-mounted equipment be installed?
7. How can safe plastic materials be cleaned?
8. Must product surfaces of equipment and utensils cause prohibited food additives to migrate into food?
9. How shall ventilation hoods be designed?

VII. Think and say about:

- 1) requirements that multi-use equipment and utensils be met;
- 2) advantages of safe plastic materials used for cleaning;
- 3) requirements to ventilation hoods, ice makers, table- and floor-mounted equipment;
- 4) advantages of proper installation and location of equipment.

Unit VII

CLEANING, SANITIZING THE EQUIPMENT AND UTENSILS

I. Remember the following words and word combinations from the text:

- | | |
|---|---|
| 1) production-line basis | 1) производственная линия
(конвейер) |
| 2) food-contact surfaces | 2) поверхности, контактирующие
с пищевыми продуктами |
| 3) griddles | 3) сковородки |
| 4) cooking equipment | 4) кухонное оборудование |
| 5) encrusted grease | 5) инкрустированная смазка |
| 6) to wipe food spills | 6) вытирать разливы пищи |
| 7) sanitizing | 7) дезинфицирование |
| 8) sink compartments | 8) отсеки для раковин |
| 9) pressure spray methods | 9) методы распыления
под давлением |
| 10) mechanical cleaning
and sanitizing | 10) механическая чистка
и дезинфекция |
| 11) dishwashing machines | 11) посудомоечные машины |
| 12) to maintain in good repair | 12) поддерживать в хорошем
состоянии |
| 13) manufacturer's instruction | 13) инструкция производителя |
| 14) automatic detergent dispensers | 14) автоматические инжекторы
моющих средств |
| 15) liquid sanitizer injectors | 15) жидкие дезинфицирующие
форсунки |
| 16) probability of contaminating
food | 16) вероятность загрязнения пищи |
| 17) transmission of disease
organisms | 17) передача болезнетворных
организмов |
| 18) debris | 18) мусор |

II. Give the Russian equivalents for the following English words and word combinations:

cooking devices, food-contact surfaces, accumulated soil, food particles, tableware, to wipe food, sanitizing utensils, sink compartments, machine cleaning, to be maintained in good repair, to minimize the probability of contaminating food.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|--|---|
| 1) горячая и холодная водопроводная вода | 1) production line |
| 2) форсунки для жидкой дезинфекции | 2) contamination of food during preparation |
| 3) передача болезнетворных организмов | 3) sanitizing solution |
| 4) загрязнение пищи во время приготовления | 4) to wash dishes manually |
| 5) мыть посуду вручную | 5) liquid sanitizer injectors |
| 6) чистящий раствор | 6) cleaning solution |
| 7) производственная линия (конвейер) | 7) hot and cold running water |
| 8) автоматическое мытье посуды | 8) automatic washing of utensils |
| 9) дезинфицирующий раствор | 9) dishwashing machine |
| 10) посудомоечная машина | 10) transmission of disease organisms |

IV. Translate the following sentences paying attention to Participle I, II and Gerund.

1. The food-contact surfaces of all cooking equipment shall be kept free of encrusted grease.

2. Clothes used for wiping food spills on tableware being served to the customer shall be clean and dry.

3. For manual washing, rinsing and sanitizing utensils and equipment shall be put into three compartments sink.

4. Utensils and equipment placed in the machine shall be exposed to all dishwashing cycles.

5. Regular, effective cleaning and sanitizing of equipment minimize the probability of contaminating food during preparation.

V. Read the text below carefully to find out methods of cleaning, sanitizing the equipment and utensils.

Text

CLEANING, SANITIZING THE EQUIPMENT AND UTENSILS

Where equipment and utensils are used for the preparation of potentially hazardous foods on a continuous or production-line basis, utensils and the food-contact surfaces of grills, griddles and similar cooking devices, cavities and door seals of microwave ovens shall be



cleaned at least once a day. The food-contact surfaces of all cooking equipment shall be kept free of encrusted grease deposits and other accumulated soil. Non-food-contact surfaces of equipment shall be cleaned as often as is necessary to keep the equipment free of accumulation of dust, dirt, food particles and other debris.

Clothes used for wiping food spills on tableware such as plates and bowls being served to the customer shall be clean, dry and used for no other purpose.

Most clothes or sponges used for wiping food spills on kitchenware, food-contact and non-contact surfaces of equipment shall be cleaned and rinsed frequently in one of the sanitizing solutions.

Manual cleaning and sanitizing. For manual washing, rinsing and sanitizing utensils and equipment, a sink with three compartments shall be provided and used. Sink compartments shall be large enough to permit the accommodation of the equipment and utensils, and each compartment of the sink shall be supplied with hot and cold potable running water. Fixed equipment and utensils and equipment too large to be cleaned in the sink compartments shall be washed manually or cleaned through pressure spray methods.

The food-contact surfaces of all equipment and utensils shall be sanitized by immersion for at least one minute in a clean solution containing of least 50 parts per million of available chlorine and having a temperature of at least 75 °F.

Mechanical cleaning and sanitizing. Cleaning and sanitizing may be done by spray-type or immersion dishwashing machines or by any other type of a machine or device. Such machines and devices shall be properly installed and maintained in good repair. Machines and devices shall be in accordance with the manufacturer's instructions, and utensils and equipment placed in the machine shall be exposed to all dishwashing cycles. Automatic detergent dispensers, wetting agent dispensers and liquid sanitizer injectors, if any, shall be properly installed and maintained.

Regular, effective cleaning and sanitizing the equipment, utensils, and work or dining surfaces minimize the probability of contaminating food during preparation, storage, or service, and the transmission of disease organisms to consumers and employees.

VI. Answer the following questions about the text.

1. How often shall the equipment be cleaned when it is used for preparation of hazardous food?
2. How shall the food-contact surfaces of all cooking equipment be kept?
3. What is used for manual washing, rinsing and sanitizing utensils?

4. What shall each compartment of the sink be supplied with?
5. What role does chlorine play in the cleaning process?
6. How is the mechanical cleaning and sanitizing done?
7. Shall wash dishing machines be maintained in good repair?
8. How shall automatic detergent dispensers be installed?
9. What do regular cleaning and sanitizing of equipment enable to achieve?

VII. Think and say about:

- 1) methods of cleaning the equipment during preparation of potentially hazardous food;
- 2) manual cleaning and sanitizing;
- 3) automatic cleaning and sanitizing;
- 4) advantages of carrying out regular, effective cleaning of equipment.

Unit VIII

EQUIPMENT, UTENSILS AND TABLEWARE STORAGE

I. Remember the following words and word combinations from the text:

- | | |
|--|---|
| 1) clean, dry location | 1) чистое, сухое место |
| 2) splash dust | 2) попадание пыли |
| 3) self-draining position | 3) самоосушаемое положение |
| 4) to be stored inverted | 4) храниться в перевернутом виде |
| 5) facilities for the storage of knives | 5) оборудование для хранения ножей |
| 6) to be pre-wrapped | 6) быть предварительно упакованным |
| 7) holders for knives | 7) держатели для ножей |
| 8) single-service forks and spoons | 8) одноразовые вилки и ложки |
| 9) to pack in bulk | 9) упаковывать в большом количестве |
| 10) to present the handle | 10) представить ручку |
| 11) to prohibit | 11) запрещать, препятствовать |
| 12) improper storage of equipment | 12) неправильное хранение оборудования |
| 13) to observe sanitary requirements | 13) соблюдать санитарные требования |
| 14) to be adapted to the protective storage requirements | 14) адаптироваться к требованиям защитного хранения продуктов |
| 15) consumer self-service | 15) самообслуживание потребителей |
| 16) to protect items | 16) защищать виды оборудования |
| 17) consumer handling | 17) обращение потребителя |

II. Give the Russian equivalents for the following English words and word combinations:

self-draining position, facilities for storing knives, to pre-wrap spoons, single-service folks, to be inserted into holders, improper storage of equipment, to present the handle of the utensils to the consumer, food particulates, additional contamination, handling procedure.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|---|-------------------------------------|
| 1) чистое, сухое место | 1) knives holders |
| 2) упаковывать в большом количестве | 2) single-service utensils |
| 3) стационарное оборудование | 3) to protect from contaminations |
| 4) одноразовые кухонные принадлежности | 4) to meet sanitary requirements |
| 5) правильное хранение продуктов | 5) clean, dry location |
| 6) соблюдать санитарные требования | 6) to be exposed to contamination |
| 7) защищать от загрязнений | 7) food self-service establishments |
| 8) предприятия общественного питания, работающие по принципу самообслуживания | 8) proper food storage |
| 9) держатели ножей | 9) stationary equipment |
| 10) подвергаться загрязнениям | 10) to pack in bulk |

IV. Translate the sentences. Define the types of Subordinate clauses.

1. Additional contamination may occur if the sanitary requirements are not observed.

2. Unless tableware is pre-wrapped, holders for knives, folks and spoons shall protect these articles from contamination.

3. Cleaned and sanitized utensils shall be stored in a clean, dry location that protects them from contamination.

4. Utensils shall be air-dried before being stored in a self-draining position.

5. Single-service knives, forks and spoons packed in bulk shall be inserted into holders by an employee who has washed his hands immediately prior to sorting the utensils.

V. Read the text below carefully to find out methods of equipment, utensils and tableware storage.

Text

EQUIPMENT, UTENSILS AND TABLEWARE STORAGE

Cleaned and sanitized utensils and equipment shall be stored at least six inches above the floor in a clean, dry location in a way that protects them from contamination by splash, dust and other means. The food-contact surfaces of fixed equipment shall also be protected from contamination.

Utensils shall be air-dried before being stored or shall be stored in a self-draining position.

Glasses and cups shall be stored inverted. Other stored utensils shall

be covered or inverted whatever practical. Facilities for the storage of knives, forks and spoons shall be designed and used to present the handle to the employee or the consumer.

Unless tableware is pre-wrapped, holders for knives, forks and spoons at self-service locations shall protect these articles from contamination and present the handles of the utensils to the consumer.

Tableware may be set prior to serving a meal when glasses and cups are inverted, and knives, forks and spoons are wrapped or otherwise covered.



Single-service knives, forks and spoons packed in bulk shall be inserted into holders or be wrapped by an employee who has washed his hands immediately prior to sorting or wrapping the utensils. Unless single-service knives, forks and spoons are pre-wrapped or pre-packed, holders shall be provided to protect these items from contamination and present the handle of the utensils to the consumer.

The storage of food equipment, utensils or single-service articles in toilet rooms or vestibules is prohibited.

Improper storage of equipment and utensils exposes them to contamination from many factors in the storage environment such as splash, dust or food particulates. Additional contamination may occur as the result of normal employee function during food preparation or service or consumer handling during self-service if the sanitary requirements for equipment or utensil storage are not observed.

Accordingly, the storage and handling procedures for cleaned and/or sanitized equipment and utensils and single-service articles must be adapted to the protective storage requirements and the storage environment specified by consumer self-service.

VI. Answer the following questions about the text.

1. How shall sanitized equipment be stored?
2. Shall the utensils be air-dried before being stored?
3. What shall protect the articles from contamination unless they are pre-wrapped?
4. May tableware be set prior to serving a meal?
5. What shall holders for knives, forks and spoons be provided for?
6. Is storage of food equipment in toilet rooms prohibited?
7. What are the sources of improper storage of equipment?
8. What must the storage and handling procedures for cleaned utensils be adapted to?

VII. Think and say about:

- 1) conditions of storage cleaned and sanitized utensils;
- 2) facilities for storage knives, forks and spoons;
- 3) location of tableware;
- 4) the consequences of improper storage of equipment.

Unit IX

FOOD PRESERVATION

I. Remember the following words and word combinations from the text:

- | | |
|--|---|
| 1) to be of organic origin | 1) иметь органическое происхождение |
| 2) to be susceptible to deterioration | 2) быть восприимчивым к ухудшению |
| 3) cellular breakdown | 3) разрушение клеток |
| 4) enzymes | 4) ферменты, энзимы |
| 5) powerful catalysts | 5) сильные катализаторы |
| 6) browning of plant tissue | 6) потемнение ткани растения |
| 7) production of unnatural flavors | 7) продуцирование неестественных ароматов |
| 8) fat oxidation | 8) окисление жиров |
| 9) yeast | 9) дрожжи, закваска |
| 10) mold | 10) плесень |
| 11) to cause alteration | 11) вызывать изменения |
| 12) food preservation | 12) сохранение продуктов питания |
| 13) hurdle technology | 13) барьерные технологии |
| 14) removal of moisture | 14) удаление влаги |
| 15) exclusion of oxygen | 15) исключение кислорода |
| 16) irradiation | 16) иррадиация, облучение |
| 17) oscillating magnetic fields | 17) осциллирующие магнитные поля |
| 18) high-intensity pulsed electric fields | 18) импульсные электрические поля высокой интенсивности |
| 19) dehydration | 19) дегидратация, обезвоживание |
| 20) to have the same effect | 20) иметь тот же эффект |
| 21) microbial growth | 21) рост микробов |
| 22) deep freezing | 22) глубокая заморозка |
| 23) to retard growth | 23) замедлять рост |
| 24) complete destruction of microorganisms | 24) полное уничтожение микроорганизмов |
| 25) pasteurization | 25) пастеризация |
| 26) to delay food spoilage | 26) задержать порчу пищевых продуктов |

II. Give the Russian equivalents to the following English words and word combinations:

food preservation, to alter acidity, cellular breakdown, fat oxidation, prevention of food spoilage, oscillating magnetic fields, to have the same effect, hurdle technology, browning of plant tissue, complex organic components, microbial growth, deep freezing.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|---|---|
| 1) вызывать изменения | 1) mold growth |
| 2) уменьшать температуру | 2) to be susceptible to deterioration |
| 3) метод консервирования | 3) to decrease temperature |
| 4) рост плесени | 4) removal of moisture |
| 5) маринование в уксусе | 5) to be of organic origin |
| 6) задерживать порчу
пищевых продуктов | 6) to cause alteration |
| 7) удаление влаги | 7) pickling in vinegar |
| 8) быть восприимчивым
к ухудшению | 8) to prevent food spoilage |
| 9) уменьшать рост
микроорганизмов | 9) canning method |
| 10) иметь органическое
происхождение | 10) to decrease the growth
of microorganisms |

IV. Translate the following sentences into Russian paying attention to Participles and Gerund.

1. Food preservation consists of the use of several methods or combining methods such as hurdle technology.

2. Prevention of food spoilage caused by microorganisms can be achieved by removing conditions necessary for their growth.

3. In commercial production dehydration can be achieved by applying heat and causing the water present in the food to evaporate.

4. Microbial growth may be prevented by either decreasing or increasing the temperature.

5. Some foods cannot be sterilized without altering their flavor.

V. Read the text below carefully to find out techniques of food preservation.

Text

FOOD PRESERVATION

All food is known to be of organic origin and is susceptible to deterioration or spoilage which can be caused by changes of biochemical (enzymic) or biological nature. In the first case the cellular breakdown is caused by enzymes contained within the food itself which can be characterized as powerful catalysts taking part in different chemical processes occurring in living organisms. The browning of plant tissue, production of unnatural flavors, the fat oxidation in butter and oils are examples of unwanted enzymic changes. In the second case deterioration is caused by microorganisms such as bacteria, yeasts and molds. These organisms break down the complex organic components of the food into simpler compounds and so cause alterations in flavor, texture, color and smell of the food.



To prevent various undesired changes food must be preserved. Food preservation consists in the use of several methods or combining of methods also known as hurdle technology. For example, it can be pasteurization or canning for milk and juices, drying, freezing or canning for meat and fish.

Prevention of food spoilage caused by microorganisms can be achieved by removing one or more of the conditions necessary for their growth. The following food preservation methods are currently used for these purposes: removal of moisture, lowering or raising the temperature, exclusion of oxygen, altering acidity (pH), chemicals and non-thermal methods such as irradiation, oscillating magnetic fields, high-intensity pulsed electric fields, high hydrostatic pressure and hurdle technology.

In the commercial production removal of water (dehydration) can be achieved by applying heat and causing the water present in the food to evaporate. The addition of salt or sugar to the food has the same effect.

Microbial growth may be prevented by either decreasing or increasing the temperature. There are two types of low temperature preservation: refrigeration or chilling and deep freezing. In the first case the food is stored at a temperature in the range of 0 – 5 °C. The growth of most species of microorganisms is retarded, some of them being killed. However, many species are still able to grow slowly at these temperatures and bacterial spores survive. Then the food is frozen. If it is to be kept for a long period of time (e.g. longer than 3 months) it is stored at –18 °C or below. The freezing process has a killing effect and bacteria continue to die during storage.

It is possible to destroy microorganisms by holding the food at a high temperature for a definite period of time, the higher the temperature, the shorter the time necessary to reduce the number of microorganisms. The complete destruction of microorganisms by heating just enough to destroy the pathogenic bacteria that may be present. This is called pasteurization.

The exclusion of oxygen prevents the growth of molds and aerobic bacteria, but yeasts and many anaerobic pathogenic bacteria can survive in such conditions. Therefore, this method may only be used in combination with other methods, e.g. destruction by heat in canning.

The acidity (pH) may be lowered so that the food becomes too acidic to allow microorganisms to grow. The most common method is the use of vinegar in pickling. Chemical preservatives are also helpful in food preservation, sugar, salt and acids being widely used for this purpose. They do not kill microorganisms but they retard growth and delay food spoilage.

VI. Answer the following questions about the text.

1. Can the spoilage of food have biochemical nature?
2. What is cellular breakdown caused by?
3. What are examples of unwanted enzymic changes?
4. What must be done to prevent various undesired changes?
5. What does the process of food preservation consist of?

6. How can prevention of food spoilage be achieved?
7. What preservation methods are currently used now?
8. How can dehydration be achieved?
9. In what way may the microbial growth be prevented?
10. What is the role of chemical preservatives?

VII. Think and say about:

- 1) the role of food preservation;
- 2) methods of food preservation used nowadays;
- 3) types of low temperature preservation;
- 4) preservation of food by high temperature.

Unit X

PRESERVATION BY USE OF HIGH TEMPERATURES

I. Remember the following words and word combinations from the text:

- | | |
|--|--|
| 1) denaturation of the proteins | 1) денатурация белков |
| 2) rigorous heat treatment | 2) горячая термообработка |
| 3) to be inhibited by low temperatures | 3) сдерживаться низкими температурами |
| 4) to effect heating | 4) производить нагрев, для осуществления нагрева |
| 5) to be heat-resistant | 5) быть термостойким |
| 6) to depend upon the method employed | 6) зависеть от используемого метода |
| 7) high-temperature-short-time | 7) высокотемпературный метод в течение короткого времени |
| 8) pasteurizing treatment | 8) пастеризационная обработка |
| 9) acidity | 9) кислотность |
| 10) to be in bulk | 10) находиться в большом количестве |
| 11) exposure times | 11) время выдержки |
| 12) milk processing | 12) переработка молока |
| 13) inactivation of enzymes | 13) инактивация ферментов |
| 14) to kill spores | 14) уничтожить споры |
| 15) to harm the quality of the product | 15) вредить качеству продукта |
| 16) holding method | 16) метод выдержки, способ длительной пастеризации |

II. Give the Russian equivalents for the following English words and word combinations:

to kill spores, heat treatment, to destroy organisms, to be inhibited by low temperatures, exposure times, milk processing, to provide sterility, to be heat-resistant, to effect heating, pasteurizing methods.

III. Find the English Equivalents for the following Russian words and word combinations in the right column:

- | | |
|-------------------------------------|---------------------------------------|
| 1) метод выдержки | 1) denaturation of the proteins |
| 2) пастеризационная обработка | 2) acidity |
| 3) уничтожать споры | 3) to kill spores |
| 4) находиться в большом количестве | 4) to harm the quality of the product |
| 5) денатурация белков | 5) to be in bulk |
| 6) высокотемпературный метод | 6) high-temperature method |
| 7) вредить качеству продукта | 7) holding method |
| 8) зависеть от используемого метода | 8) pasteurizing treatment |
| 9) кислотность | 9) to depend upon the method employed |

IV. Translate the following sentences into Russian paying attention to Modal verbs and their equivalents.

1. Most of microorganisms may be killed by heat treatment.
2. In pasteurization some spoilage organisms must be inhibited by low temperatures.
3. The various degrees of heating used on foods may be classified as pasteurization and sterilization.
4. Beer may be pasteurized at 60 °C.
5. Exposure times may be from 1 second to some seconds.

V. Read the text below carefully to find out methods of food preservation by use of high temperatures.

Text

PRESERVATION BY USE OF HIGH TEMPERATURES

The killing of microorganisms by heat is supposed to be due to denaturation of the proteins and especially to the inactivation of enzymes required for metabolism. The heat treatment necessary to kill organisms or their spores varies with the kind of organisms to be destroyed, its state, and

the environment during heating. Depending upon the heat treatment employed only part of microorganisms, most or all of them may be killed. The temperature selected and the time used in heat processing will also depend upon other preservative methods to be employed and the effect of



heat on the food. The greater the heat treatment, the more organisms will be destroyed, up to the heating that will produce sterility of the product. In pasteurization, for example, most of the spoilage organisms are killed but others survive and must be inhibited by low temperatures or some other

preservative methods, if spoilage is to be prevented. The various degrees of heating used on foods may be classified as pasteurization and sterilization.

Pasteurization is known to be a heat treatment that destroys part but not all of the microorganisms and usually involves the application of temperatures below 100 °C. The heating may be effected by means of steam, hot water, dry heat, or electric currents, the products being cooled promptly after the heat treatment. Pasteurization is used when more rigorous heat treatment may harm the quality of the product, or when one aim is to kill only pathogenic bacteria, or when the main spoilage organisms are not very heat-resistant, like the yeast in fruit juices, or when any surviving spoilage organisms will be taken care of by additional preservative methods to be employed.

Time and temperatures used in pasteurizing process are sure to depend upon the method employed and the product treated. The high-temperature-short-time (HTST) method employs a comparatively high temperature for a short time, whereas the low-temperature-long-time or holding (LTH) method uses a lower temperature for a longer time. For example, the heat treatment of milk at some 64 °C for 30 minutes is the holding method and at about 72 °C for at least 15 seconds is the HTST method. Beer may be pasteurized at 60 °C or above, the time varying with the temperature. The pasteurizing treatment given to fruit juices depends upon their acidity and whether they are in bulk or in a bottle or a can.

Sterilization means the destruction of all microorganisms involving heating for a longer time or at a higher temperature than is necessary for pasteurization. The ultra-high-temperature (UHT) range begins at around 88 – 100 °C and may extend to 150 °C or above, exposure times may be anywhere from 1 second to some seconds. UHT is employed mainly in milk processing.

VI. Answer the following questions about the text.

1. What is the killing of microorganisms by heat due to?
2. What does the temperature selected and times used in heat processing depend upon?
3. How is the spoilage of food prevented?
4. How may the various degrees of heating be classified?
5. What is pasteurization?
6. How may the heating be effected in pasteurization process?
7. When is pasteurization used?
8. What does sterilization mean?
9. Where is ultra-high-temperature method of sterilization used?

VII. Think and say about:

- 1) the essence of preservation by use of high temperatures;
- 2) use of pasteurization method;
- 3) use of sterilization methods.

Unit XI

PRESERVATION BY USE OF LOW TEMPERATURES

I. Remember the following words and word combinations from the text:

- | | |
|--|--|
| 1) to retard chemical reactions | 1) замедлять химические реакции |
| 2) action of food enzymes | 2) действие пищевых ферментов |
| 3) to bring about undesirable changes | 3) вызывать нежелательные изменения |
| 4) to multiply | 4) размножаться, умножить, множить |
| 5) cold storage (chilled storage) | 5) хранение в охлажденном состоянии |
| 6) to refer to | 6) ссылаться на, относиться |
| 7) mechanical freezing | 7) механическое замораживание |
| 8) relative humidity | 8) относительная влажность |
| 9) air velocity | 9) скорость воздуха |
| 10) conditions of storage | 10) условия хранения |
| 11) carbon dioxide | 11) диоксид углерода |
| 12) to reduce the rate of spoilage | 12) уменьшить скорость порчи продукта |
| 13) to remove odors | 13) удалить запахи |
| 14) state flavor | 14) несвежий, затхлый аромат |
| 15) commercial storage freezers | 15) промышленные морозильные камеры хранения |
| 16) intercellular spaces of tissues | 16) внутриклеточные пространства тканей |
| 17) to produce precipitation of proteins | 17) осуществлять осаждение белков |
| 18) partial destruction of cell walls | 18) частичное разрушение клеточных стенок |
| 19) irreversibility of cell absorption | 19) необратимость поглощения клеток |
| 20) defrosting | 20) размораживание |

21) to disrupt the texture of food	21) нарушить структуру пищи
22) plate freezing	22) контактное замораживание
23) refrigerant	23) хладагент, охладитель
24) immersion freezing	24) замораживание погружением в жидкую холодную среду
25) blast freezing	25) замораживание с помощью потока воздуха
26) fluidized bed freezing	26) замораживание в псевдосжиженном слое
27) a mesh	27) сетка

II. Give the Russian equivalents for the following English words and word combinations:

cold storage, mechanical freezing, relative humidity, to reduce the rate of spoilage, defrosting, action of food enzymes, immersion freezing, to disrupt the texture of food, carbon dioxide.

III. Find the English equivalents for the Russian words and word combinations in the right column:

1) хладагент	1) blast freezing
2) замораживать в псевдосжиженном слое	2) to bring about undesirable changes
3) скорость воздуха	3) to produce precipitation of proteins
4) удалять запахи	4) refrigerant
5) вызывать нежелательные изменения	5) partial destruction of cell walls
6) осуществлять осаждение белков	6) conditions of storage
7) частичное разрушение клеточных стенок	7) fluidized bed freezing
8) условия хранения	8) air velocity
9) контактное замораживание	9) to remove odors
10) замораживание с помощью потока воздуха	10) plate freezing

IV. Translate the following sentences paying attention to the Passive Voice.

1. Low temperatures are used to retard chemical reactions.
2. The term «cold storage» can be applied to any reduction in the normal temperature of food.
3. The chilling temperature is selected on the basis of the kind of food and the time and conditions of storage.
4. The rate of spoilage of food is reduced when the level of carbon dioxide in the air decreases.
5. The product is stored in a frozen state but the exact temperature could depend upon the product itself.

V. Read the text below carefully to find out methods of food preservation by use of low temperatures.

Text

PRESERVATION BY USE OF LOW TEMPERATURES

Low temperature are used to retard chemical reactions and action of food enzymes and also to slow down or stop growth of microorganisms in food. The lower the temperature, the slower will be chemical reactions, enzyme action and microbial growth.

Any raw plant or animal food is sure to contain a variety of bacteria, yeasts and molds, which being in good conditions for growth can bring about undesirable changes in the food. Each microorganisms present has an optimal or best temperature for growth and minimal temperature below which it cannot multiply. The temperature dropping from this optimal one toward the minimal, the rate of growth of the microorganism decreases and is the slowest at the minimal temperature.



The term «cold storage» (or «chilled storage») can be applied to any reduction in the normal temperature of food, but it is mainly referred to the use of temperatures at or above 0 °C. The temperature used depends on the

nature of the product and the storage atmosphere. Bananas, for example, are stored best at 15 °C, whereas meat is stored at 1 to 2 °C. This method usually involves cooling by ice or by mechanical refrigeration. It may be used as the main preservative process applied.

Factors to be considered in connection with chilling storage include the temperature of chilling, the relative humidity, air velocity and composition of the atmosphere in the storage room. The chilling temperature is selected on the basis of the kind of food and the time and conditions of storage. The temperature of a refrigerator is mechanically controlled but varies in different parts usually between 0 °C and 10 °C. The optimal relative humidity of the atmosphere in chilling storage varies with the food stored and with environmental factors such as temperature and composition of the atmosphere. For example, if the level of carbon dioxide in the air is increased the rate of spoilage is reduced. The optimal concentration of carbon dioxide depends on the food stored. Ventilation or control of air velocities of the storage room is important in maintaining a uniform relative humidity throughout the room, in removing odors, and in preventing the development of stale odors and flavors.

The term «frozen storage» is certain to be more obvious. The product is stored in a frozen state but the exact temperature could depend upon the product itself. Most commercial storage freezers are at or below –18 °C. The freezing process itself involves two methods of microorganisms' growth control – slow freezing and quick freezing. In the first case, most ice crystals are formed in the intercellular spaces of tissues.

That is, freezing gradually extracts water from cells producing precipitation of proteins, concentration of salts and a partial destruction of the cell walls. All these result in dehydration, denaturation of proteins and irreversibility of cell absorption upon defrosting.

Quick-freezing processes in which the food passes through the range of maximum ice-crystal formation in 30 minutes or less are preferable, since the small ice crystals formed by such a process do not disrupt the texture of the food. There are four main methods of freezing:

Plate freezing. In this method the refrigerant passes through a number of hollow plates, the food being placed between the plates. The latter may be moved up and down to make better contact with the food.

Immersion freezing. In this method the food is placed directly into the refrigerant. The refrigerant used depends on the food being frozen.

Blast freezing. In this method a blast of very cold air is blown directly onto the food.

Fluidized bed freezing. This method is very successful for freezing foods that are of small particle size, such as peas. It is an adaptation of blast freezing in which the air is blown upward through a mesh over which the food is passing.

VI. Answer the following questions about the text.

1. What are low temperatures used for?
2. What will bring about undesirable changes in food?
3. What temperature decreases the growth of microorganisms?
4. What can cold storage be applied?
5. What factors does chilling process include?
6. What does temperature in chilling depend on?
7. What methods does the freezing process involve?
8. What is plate freezing?
9. What does immersion freezing consist of?
10. When is fluidized bed freezing used?

VII. Think and say about:

- 1) effect of low temperature upon chemical reactions and microorganisms;
- 2) application of cold storage;
- 3) factors taken part in chilling storage;
- 4) methods the freezing process consists of.

Unit XII

THE CANNING PROCESS

I. Remember the following words and word combinations from the text:

- | | |
|--|---|
| 1) canning process | 1) процесс консервирования |
| 2) altering temperatures | 2) переменные температуры |
| 3) to grade and wash vegetables and fruits | 3) сортировать и мыть овощи и фрукты |
| 4) to expose to steam | 4) подвергать воздействию пара |
| 5) blanch process | 5) процесс бланширования |
| 6) to inactivate enzymes | 6) инактивировать ферменты |
| 7) to affect the stability of food | 7) влиять на стабильность пищи |
| 8) to remove water-soluble nutrients | 8) удалить водорастворимые питательные вещества |
| 9) ascorbic acid | 9) аскорбиновая кислота |
| 10) to fill the cans | 10) заполнять банки |
| 11) exhaust box | 11) эксгаустер |
| 12) to seal on the lid | 12) закатать крышку |
| 13) to reduce temperature gradually | 13) постепенно снижать температуру |
| 14) to avoid rusting | 14) избегать образования ржавчины |
| 15) to run on a continuous system | 15) работать по непрерывной системе |
| 16) batch process | 16) периодический процесс |
| 17) aseptic filling | 17) асептическое наполнение |
| 18) bulked product | 18) объемный продукт |
| 19) small vent-hole | 19) небольшое вентиляционное отверстие |
| 20) to be heat sensitive | 20) быть чувствительным к теплу |
| 21) to overcook | 21) пережарить |
| 22) to be exposed to deterioration | 22) подвергаться ухудшению |
| 23) insufficient sterilization | 23) недостаточная стерилизация |

24) spores of anaerobic bacteria	24) споры анаэробных бактерий
25) to be improperly sealed	25) быть неправильно герметизированным
26) to be due to attack	26) вследствие воздействия
27) to seal	27) закатывать
28) solder	28) припой
29) to buckle	29) вспучиваться

II. Give the Russian equivalents for the following English words and word combinations:

to affect the stability of food, some species of microorganisms, to fill the cans, exhaustor box, temporary leakage, automated canning processes, liquid food, reason for spoilage, acid foods, batch process.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

1) аскорбиновая кислота	1) altering temperatures
2) процесс бланширования	2) to expose to steam
3) переменные температуры	3) to run on continuous system
4) закатывать крышку	4) to remove water-soluble nutrients
5) небольшое вентиляционное отверстие	5) to inactivate enzymes
6) быть чувствительным к теплу	6) to seal on the lid
7) удалять водорастворимые питательные вещества	7) ascorbic acid
8) работать по непрерывной системе	8) blanch process
9) подвергаться воздействию пара	9) small vent-holes
10) инактивировать ферменты	10) to be sensitive to heat

IV. Translate the following sentences. Define the Tenses.

1. Blanching inactivates enzymes which may affect the stability of food.
2. A partial vacuum will be formed in the cell when the lid is sealed on.
3. The cans would buckle if the pressure was reduced suddenly.
4. Leakage may occur in a can which has been improperly sealed.
5. There are many variations in the standard canning process.

V. Read the text below carefully to find out what canning process is.

Text

THE CANNING PROCESS

The canning process involves a number of operations using the altering temperatures. After being graded and washed most vegetables and some fruits are blanched either by being immersed in boiling water or by being exposed to steam. The period of exposure may vary from 2 to 10 minutes. Blanching inactivates enzymes which may affect the stability of the food and kills some species of microorganisms. This process removes varying percentages of water-soluble nutrients such as ascorbic acid, B-vitamins, sugars and minerals, but the losses are not serious. Then the washed open cans are filled with a weighed amount of the food and brine in the case of vegetables and sugar syrup in the case of fruits. After filling the cans are usually passed to an exhaust box in which they are exposed to hot water or steam so that, when the lid is sealed on, a partial vacuum will form in the can.



Being sealed the cans are exposed to sterilization, the amount of heat required depends upon the size of the can, the nature of its contents, and the pH of the food to be sterilized. Then the cans must be cooled slowly by gradually reducing the pressure of the steam used for heating and thus

bringing about a gradual reduction of temperature. If the pressure were reduced suddenly the cans would buckle. The cans are then cooled further using water. Since temporary leakage may occur at this point, it is important for the cooling water to be clean and sterile. Cooling is only continued until the cans reach a temperature of 38 °C and then the warmth of the can is sufficient to allow the cans to be dried in the air. This allows to avoid rusting and also reduces the danger of microorganisms present in water on the surface being drawn into the can through a temporary leak.

Modern canning processes are completely automated and are run on a continuous system rather than using batch processes.

There are many variations in the standard canning process. One of the most common is the use of aseptic filling, in which the bulked product and the containers are sterilized separately. The containers are then filled aseptically, i.e. under conditions where the entry of microorganisms is prevented before the cans being sealed. In the case of cans, they are filled through a small vent-hole which is then closed with solder. Aseptic canning is mainly used for liquid foods which are heat sensitive and therefore likely to be overcooked in the standard canning process.

Canned foods are very stable and may remain in good condition, for several years, even at ordinary temperatures. However, they can also be exposed to deterioration. The main reasons for spoilage of canned foods are: 1) insufficient sterilization which means that spores anaerobic bacteria may survive and grow; 2) leakage which is due to either a badly made can or a can which has been improperly sealed; 3) corrosion of the can which may be due to attack by the content, particularly acid foods, or damage due to storage in unsatisfactory conditions, i.e. storage in a warm, humid atmosphere.

VI. Answer the following questions about the text.

1. What does canning process involve?
2. What may affect the stability of the food?
3. What does blanching consist of?

4. What does sterilization of cans include?
5. What is the most standard canning process?
6. Where is aseptic canning mainly used?
7. Can canned food be exposed to deterioration?
8. What are the main reasons for spoilage of canned food?

VII. Think and say about:

- 1) number of operations used in the canning process;
- 2) the ways of sterilization of cans;
- 3) the use of aseptic filling;
- 4) reasons of deterioration of canned foods.

Unit XIII

DEHYDRATION

I. Remember the following words and word combinations from the text:

- | | |
|--|--|
| 1) drying foods | 1) сушка продуктов |
| 2) wind desiccation | 2) осушение ветром |
| 3) microbial growth control | 3) контроль роста микробов |
| 4) hardening | 4) закапывание, уплотнение |
| 5) to trap moisture | 5) задерживать влагу |
| 6) process of diffusion | 6) процесс диффузии |
| 7) tunnel drying | 7) туннельная сушка |
| 8) perforated tray | 8) перфорированный лоток |
| 9) fluidized bed drying | 9) сушка в кипящем слое |
| 10) spray drying | 10) сушка распылением |
| 11) roller drying | 11) вальцовая (барабанная) сушка |
| 12) scraper knife | 12) скрепер |
| 13) to subject to mild heating process | 13) подвергать умеренному процессу нагрева |
| 14) vacuum chamber | 14) вакуумная камера |
| 15) to sublime | 15) сублимировать, возгонять |
| 16) little heat damage | 16) небольшое тепловое повреждение |
| 17) to reconstitute | 17) воссоздать продукт |
| 18) orange powder | 18) оранжевый порошок |
| 19) freeze drying | 19) сублимационная сушка |

II. Give the Russian equivalents for the following English words and word combinations:

artificial drying of food, microbial growth control, vacuum chamber, perforated tray, to trap moisture, roller drying, to cause undesirable changes in food, scraper knife, to affect nutritive value, freeze drying.

III. Find the English Equivalents for the following Russian words and word combinations in the right column:

- | | |
|--|---|
| 1) сушка распылением | 1) process of diffusion |
| 2) высушивание ветром | 2) little heat damage |
| 3) оранжевый порошок | 3) controlled flow of air |
| 4) традиционный метод сушки мяса и рыбы | 4) wind desiccation |
| 5) удаление влаги | 5) to subject to mild heating process |
| 6) контролируемый поток воздуха | 6) roller drying |
| 7) процесс диффузии | 7) removal of moisture |
| 8) вальцовая сушка | 8) traditional method of drying meat and fish |
| 9) небольшое тепловое повреждение | 9) orange powder |
| 10) подвергать умеренному процессу нагрева | 10) spray drying |

IV. Translate the following sentences, paying attention to Participles and Gerund.

1. Drying is probably the most ancient method of food preservation.
2. Smoking and salting are known to have been used in the traditional methods for drying meat and fish.
3. There are many types of equipment used for dehydrating foods.
4. Products dried by roller drying include cereals and potatoes.
5. The product being porous can be rapidly rehydrated in cold water.

V. Read the text below carefully to find out what technique of dehydration is.

Text

DEHYDRATION

Drying is probably the most ancient method of food preservation. The traditional method of drying foods was simply to lay the foods in the sun. It is still used in some countries. The term “dehydration” usually



refers to artificial drying rather than the natural sun and wind desiccation. Some traditional methods involve the use of means of microbial growth control in addition to the removal of moisture. For example, both smoking and salting are known to have been used in the traditional methods for drying meat and fish.

The modern process of dehydration consists of the removal of moisture from the food by the application of heat usually in the presence of a controlled flow of air. It is important that the temperature used should not be too high, since this will cause undesirable changes in the food. Also excessive heat may cause “hardening” where the outside of the food becomes brittle and hard while moisture is trapped in the center and is unable to pass through the food by the normal processes of diffusion and capillary action.

There are many types of equipment used for dehydrating foods. Some of the more usual methods of drying are:

a) **Tunnel drying.** In this method the food is placed on conveyor or perforated trays and passed through a warm air tunnel. A more modern development is fluidized bed drying in which warm air is blown upwards and the particles of food are kept in motion. This method is used particularly for vegetables.

b) **Spray drying.** This method is used for drying fairly liquid foods such as milk and eggs. The food enters the top of a large drying chamber as a fine spray. The spray mixes with warm air, the water evaporates and a fine powder is produced which is removed from the bottom of the chamber.

c) **Roller drying.** In this method the food is applied in paste form as a thin film to the surface of a revolving heated roller or drum. As the drum rotates the food dries and the dried product is removed from the drum by a scraper knife. Products dried by this method include breakfast cereals and potatoes.

d) **Freeze drying.** In this method of drying the food is first of all frozen and then subjected to a mild heating process in a vacuum chamber. The ice crystals being formed during the freezing stage sublime when heated under reduced pressure, i.e. they change directly from ice to water vapor without passing through the liquid phase. This result in a product which is porous and very little changed in size and shape from the original food. Since little heat is required there is little heat damage and the color, flavor and nutritive value are affected less than in some other methods of drying. The product being porous can rapidly be rehydrated (reconstituted) in cold water. A wide variety of food can be dried by this method, e.g. meat, fish, fruits and vegetables, the weight of foods being reduced by nearly 100 per cent.

e) Evaporation under high vacuum is used for the production of instant (soluble) coffee, tea and orange powder.

VI. Answer the following questions about the text.

1. What is the most ancient method of food preservation?
2. What does the process of dehydration mean?
3. What may excessive heat cause in drying?
4. What does spray drying consist of?
5. What is tunnel drying?
6. Which product is made by freeze drying?
7. What products can be dried by freeze drying?
8. When is evaporation used?

VII. Think and say about:

- 1) traditional methods of drying food;
- 2) the modern process of dehydration;
- 3) equipment used for drying: in spray drying, roller drying and freeze drying.

Unit XIV

PRESERVATION OF MILK AND DAIRY PRODUCTS

I. Remember the following words and word combinations from the text:

- | | |
|--|--|
| 1) soft (hard) cheese | 1) мягкий (твердый) сыр |
| 2) sweetened condensed milk | 2) сгущенное молоко |
| 3) sound waves | 3) звуковые волны |
| 4) to kill pathogens | 4) убивать патогены |
| 5) to interfere with the activities of desirable organisms | 5) вмешиваться в деятельность необходимого организма |
| 6) in bottle sterilisation process | 6) процесс стерилизации в бутылке |
| 7) ultra high temperature process | 7) процесс с использованием сверхвысокой температуры |
| 8) to affect the nutritive value | 8) изменить питательную ценность |
| 9) resultant product | 9) конечный продукт |
| 10) butter making | 10) изготовление масла, маслоделие |
| 11) to inject steam | 11) впрыскивать пар |
| 12) evacuation | 12) откачивание (воздуха), вакуумирование, разряжение |
| 13) fermented milk products | 13) кисломолочные продукты |
| 14) unripened cheese | 14) незрелый сыр |
| 15) dairy desserts | 15) молочные десерты |
| 16) to smoke cheese | 16) коптить сыр |
| 17) irradiation | 17) иррадиация, облучение |
| 18) ultrasonic vibrations | 18) ультразвуковые колебания |
| 19) ATST pasteurization | 19) высокотемпературная пастеризация в течение короткого времени |
| 20) vacreation | 20) вакуация (пастеризация молока в вакууме) |
| 21) inferiority | 21) более низкое качество |
| 22) shelf-life | 22) сохраняемость |

II. Give the Russian equivalents for the following English words and word combinations:

carbohydrates, to be rich in amino acids, sweetened condensed milk, to keep quality of milk, to destroy microorganisms, dried milk evacuation, steam injection, resultant product, refrigeration temperature, unripened cheese.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|---|------------------------------------|
| 1) молочные продукты | 1) to kill bacteria |
| 2) ультразвуковые колебания | 2) sodium chlorides |
| 3) более низкое качество | 3) fermented milk products |
| 4) кисломолочные продукты | 4) to smoke cheese |
| 5) процесс стерилизации в бутылки | 5) shelf-life |
| 6) коптить сыр | 6) inferiority |
| 7) хлорид натрия | 7) dairy products |
| 8) убивать бактерии | 8) microbial multiplication |
| 9) размножение микробов | 9) in-bottle sterilization process |
| 10) сохраняемость, продолжительность хранения | 10) ultrasound vibration |

IV. Translate the following sentences paying attention to Modal Verbs and their equivalents.

1. Milk can be prepared in many forms for consumption.
2. Being an excellent media for the growth of many types of microorganisms, milk and most dairy products must be carefully preserved.
3. The objectives of pasteurization are to kill all pathogens that may enter the milk.
4. Milk may also be sterilized either by in-bottle sterilization process or by UAT (ultra high temperature) process.
5. Irradiation, sound waves, magnetic fields, high pressure and electric currents may be used in some cases.

V. Read the text below carefully to find out methods of preservation of milk and dairy products.

Text

PRESERVATION OF MILK AND DAIRY PRODUCTS

Milk is known to be the most complete food of all. It contains protein in large quantity and of the highest quality, carbohydrates and fat being also present in sufficient quantities. It is also rich in vitamins, minerals and amino acids. Milk can be prepared in many forms for consumption. Some is sold as fluid milk, some is made into cream, ice cream, soft cheese, hard cheese, butter, evaporated, sweetened condensed or dried milk.

Being an excellent media for the growth of many types of microorganisms, milk and most dairy products must be carefully preserved. There are different ways of their preservation such as heat treatment, refrigeration, freezing, using of chemical preservatives, irradiation, sound waves, magnetic fields, high pressure or electric current.



The mild heat treatment called pasteurization is usually used for milk and cream preservation. The objectives of pasteurization are to kill all the pathogens that may enter the milk and be transmitted to people and to improve the keeping quality of milk. Milk is also pasteurized for the manufacture of cheese or cream for making butter. A third objective is to destroy microorganisms that would interfere with the activities of desirable organisms, such as the starter culture, or cause inferiority or spoilage of the product. The pasteurization process for milk involves heating the milk in large tanks to 63 °C for 30 minutes to eliminate pathogens and enzymes.

Milk may also be sterilized either by an in-bottle sterilization process or by UTH (ultra high temperature) process. The UTH range begins at around 88 – 100 °C and may extend to 150 °C or above, exposure times may be from 1 second to some seconds. The main disadvantages of UTH process is that the severe heating needed can affect or alter the nutritive

value, the color and the flavor of the resultant product, the vitamin content being reduced.

Cream for butter making is given a greater heat treatment during pasteurization than market cream, because cream itself is sure to contain a higher population of microorganisms than milk. Rapid heating of cream is accomplished by injecting steam or by a combination of steam injection and evacuation in a process known as vacreation.

Most dairy products require the use of low temperatures as one factor in their preservation, and often it is the most important factor. Milk is kept at refrigeration temperatures during storage on the farm, in the truck or tank during transportation to the plant and chilled until they reach the consumer. Most kinds of ripened cheese also are stored at chilling temperatures after their ripening is complete.

Ice cream and other dairy desserts are frozen as part of the manufacturing process and are stored in the frozen state, where microbial multiplication is impossible. Butter in storage is held at -17°C to -18°C or lower. Frozen cream is kept in considerable amounts at a similar temperature. Milk concentrated to one third its volume, can be frozen at -17°C to -18°C by freeze-drying method and stored at -23°C to -24°C for several weeks without deterioration.

Different chemical preservatives are known to be widely used in dairy products preservation. Added sugar acts as a preservative of sweetened condensed milk. Sodium chloride is added in the manufacture of butter and various kinds of cheese. Various gases including nitrogen and carbon dioxide have been as a package atmosphere for some kinds of cheese to increase their shelf-life. Cheese is also smoked primarily for the addition of flavor, although the drying and the chemical preservatives from the smoke may improve the keeping quality.

Irradiation, sound waves, magnetic fields, high pressure and electric currents may be used in some cases. For example, ultraviolet light in the dairy industry is used for irradiation of rooms to reduce the number of microorganisms in the air in processing rooms where sweetened condensed milk is being prepared or cut cheese is being packaged. Ultrasonic vibrations combined with a temperature of 40°C to 50°C kill most of the

bacteria in milk or in cheese during ripening. Alternating electric currents have been applied to milk as a method for rapid heating in HTST pasteurization.

VI. Answer the following questions about the text.

1. What does milk contain?
2. How can milk be prepared?
3. Why must most dairy products be carefully preserved?
4. What method is usually used for milk and cream preservation?
5. How may milk also be sterilized?
6. What is the main disadvantage of UHT process?
7. What do most dairy products require for pasteurization?
8. How is milk kept?
9. How are ripened cheese stored?

VII. Think and say about:

- 1) different methods of preservation of dairy products;
- 2) methods of milk sterilization;
- 3) factors important in refrigeration of dairy products.

Unit XV

PRESERVATION OF MEAT

I. Remember the following words and word combinations from the text:

- | | |
|--------------------------------|---|
| 1) excellent source of protein | 1) отличный источник белка |
| 2) to be rich in minerals | 2) быть богатым микроэлементами |
| 3) thiamin | 3) тиамин (витамин В1) |
| 4) niacin | 4) ниацин |
| 5) trace elements | 5) микроэлементы |
| 6) to be highly perishable | 6) быть скоропортящимся |
| 7) slaughter | 7) убой (скота) |
| 8) cured meat | 8) вяленое мясо |
| 9) heat-processed meat | 9) термообработанное мясо |
| 10) luncheons meat | 10) мясной завтрак |
| 11) chilling meat | 11) охлажденное мясо |
| 12) lamb | 12) молодая баранина |
| 13) mutton | 13) баранина |
| 14) pork | 14) свинина |
| 15) to lengthen storage time | 15) продлить срок хранения |
| 16) heavy salting preservation | 16) консервация при сильном посоле |
| 17) patty | 17) брикет из мясного фарша,
котлета |
| 18) meat balls | 18) фрикадельки |

II. Give the Russian equivalents for the following English words and word combinations:

total protein content, to store under normal conditions, specialized technique, heat processing, trace elements, to kill spoilage organisms, to be

rich in minerals, meat balls, to preserve meat during transportation, home freezers.

III. Find the English Equivalents for the following Russian words and word combinations in the right column:

- | | |
|------------------------------------|--------------------------------|
| 1) хранить мясные продукты | 1) perishable products |
| 2) источник витаминов | 2) heavy salting preservation |
| 3) консервированная ветчина | 3) relative humidity |
| 4) температура хранения мяса | 4) source of vitamins |
| 5) вяленое мясо | 5) meat balls |
| 6) продлить срок хранения | 6) canned ham |
| 7) фрикадельки | 7) to store meat products |
| 8) скоропортящиеся продукты | 8) cured meat |
| 9) относительная влажность | 9) temperature of meat storage |
| 10) консервация при сильном посоле | 10) to lengthen storage time |

IV. Translate the following sentences paying attention to the forms and functions of the Infinitive.

1. Meat is known to play the most significant role in the diet.
2. To be preserved meat may be canned, chilled, frozen, dried, cured, smoked, pickled or sometimes irradiated.
3. Meat is also considered to be rich in minerals.
4. The time limit for chilling storage of beef is found to be about 30 days.
5. Freezing is used to preserve meat during transportation over long distances.

V. Read the text below carefully to find out methods of meat preservation.

Text

PRESERVATION OF MEAT

Meat is known to play the most significant role in the diet. Being an excellent source of protein to the human body, meat provides about a half of the total protein content of the average diet. All meats contain fat, the percentage of this nutrients varying from animal, to animal and from one part of it to another. Meat is also considered to be rich in minerals and some vitamins. It is a good source of the B-complex vitamins, thiamin and niacin being the most important ones. Most of the essential minerals are found in meat, particularly phosphorus, iron, copper and trace elements.



Being highly perishable fresh meats cannot be stored under normal conditions and therefore must be cooled soon after slaughter and kept just above the freezing point until used or preserved by some other methods. To be preserved meat may be canned, chilled, frozen, dried, cured, smoked, pickled or sometimes irradiated.

The canning of meat is a very specialized technique in that the procedure varies considerably with the meat product to be preserved. Commercially canned meats can be divided into two groups on the basis of the heat processing used: (I) meats that are heat-processed to make them sterile; and (II) meats that are heated enough to kill part of the spoilage organisms but must be kept refrigerated to prevent spoilage. Canned hams and luncheon meats are so handled. Meats of the former group are processed at the temperature of 98 °C, the size of can being usually less

than 500 grs. Meats of the latter group can be packed in containers up to 9 kgs and are processed at temperatures of about 65 °C.

More meat is preserved by the use of low temperatures than by any other method, and much more by chilling than by freezing. Modern methods involve chilling meat promptly and rapidly to temperatures near freezing and chilling storage at only slightly above the freezing point, storage temperatures varying from – 1,4 to 2,2 °C. The time limit for chilling storage of beef is found to be about 30 days, for pork, lamb and mutton 1 – 2 weeks, depending upon the numbers of microorganisms present, the temperature and the relative humidity. Storage time can be lengthened by keeping of meats in an atmosphere containing carbon dioxide or ozone.

Freezing is used to preserve meat during transportation over long distances or for holding until times of shortage and, of course, considerable quantities of meat now are frozen in home freezers, the preservation of frozen meat is increasingly effective as the storage temperature drops from –12,2 toward –28,9 °C.

Preservation by heavy salting is an old method, ordinary salting being combined with curing and smoking in order to be effective. The curing agents permitted are sodium chloride, sugar, sodium nitrate, sodium nitrite and vinegar, only the first four being commonly used.

Drying meats has been practiced for centuries. It is usually combined with salting and smoking. Drying may be accomplished in vacuum, in trays or by other methods. The final product keeps without refrigeration. Freeze drying is mostly used for preservation of processed products such as patties and meat balls rather than fresh meat.

VI. Answer the following questions about the text.

1. What role does meat play in the diet?
2. How much is the total protein content in meat?

3. What are the essential minerals in meat?
4. Can meat be stored under normal conditions?
5. What is a very specialized technique in meat preservation?
6. What do modern methods of meat preservation include?
7. When is freezing of meat used?
8. What is an old method of meat preservation?
9. What does drying meat consist of?

VII. Think and say about:

- 1) role of meat in the diet;
- 2) methods of meat preservation:
 - a) canning;
 - b) chilling;
 - c) freezing;
 - d) curing.

Unit XVI

FISH PRESERVATION

I. Remember the following words and word combinations from the text:

- | | |
|--|--|
| 1) seafood | 1) морепродукты |
| 2) fishery products | 2) рыбная продукция |
| 3) desirable balance | 3) желаемый баланс |
| 4) fish liver oil | 4) рыбий жир |
| 5) to be susceptible to microbial spoilage | 5) подвергаться порче, вызванной микробами |
| 6) lean fish | 6) постная рыба |
| 7) prompt treatment | 7) быстрая обработка |
| 8) rigorous method | 8) жесткий метод |
| 9) trawlers | 9) траулеры |
| 10) to pack in crushed ice | 10) упаковывать в холодный лед |
| 11) water glaze | 11) водная глазурь |
| 12) to retard adverse chemical changes | 12) замедлять неблагоприятные химические изменения |
| 13) to be cut into can length portions | 13) нарезать по размеру банки |
| 14) to seal a can under vacuum | 14) закупорить банку под вакуумом |
| 15) to decrease bacterial decomposition | 15) уменьшить бактериальное разложение |
| 16) benzoic acid | 16) бензойная кислота |
| 17) to result in partial cooking | 17) привести к частичной варке |
| 18) acidification with vinegar | 18) подкисление уксусом |
| 19) to couple with | 19) соединяться с |
| 20) airtight container | 20) воздухонепроницаемый (герметичный) контейнер |

II. Give the Russian equivalents for the following English words and word combinations:

fish preservation, fish liver oil, prompt treatment, seafood, crushed ice, acidification with vinegar, to retard adverse chemical changes, to result in partial cooking, water glaze, airtight container, lean fish.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|--|--|
| 1) подвергаться порче, вызванной микробами | 1) fish preservation |
| 2) быстрая обработка | 2) fat content |
| 3) закупорить банку под вакуумом | 3) to decrease bacterial growth |
| 4) бензойная кислота | 4) to be susceptible to microbial spoilage |
| 5) уменьшить разложение бактерий | 5) rigorous method |
| 6) жесткий метод | 6) benzoic acid |
| 7) упаковывать в банки | 7) to pack in crushed ice |
| 8) хранение рыбы | 8) to seal a can under vacuum |
| 9) содержание жира | 9) prompt treatment |
| 10) упаковывать в измельченный лед | 10) to pack into cans |

IV. Translate the following sentences. Define the Subordinate Clauses.

1. When outside temperatures are high it is necessary to chill the fish.
2. Curing also adds chemicals to fish which further retard spoilage.
3. The smoking may be done at low temperatures or high temperatures which result in the partial cooking of the fish.
4. Use of lower storage temperatures is very effective in oxidation which otherwise causes excessive deterioration upon prolonged storage.
5. Various combinations of herring treatment coupled with airtight container preserve the fish, although refrigeration also must be employed for some products.

V. Read the text below carefully to find out methods of fish preservation.

Text

FISH PRESERVATION

Fish is still a principal food of millions of people as it has been for centuries. Along with meat, fish and seafood are an excellent source of protein, fat content varying from one per cent or less 15 per cent depending upon the kind of fish. Added nutritional values of fishery products include a desirable balance of essential minerals, calcium and iodine being the most important. Fish also contains vitamins: A, D, K and B-complex. Fish liver oil has considered to be the best source of vitamin A.



Of all the flesh foods fish is the most susceptible to microbial spoilage, small fish being more perishable than large ones, and fatty fish deteriorating more rapidly than lean ones. Its preservation therefore involves prompt treatment by preservative method, often these methods being rigorous compared with those used on meat. Fish preservation can be accomplished by chilling, freezing, salting, drying, smoking, canning or combinations of these methods.

When outside temperatures are high and distances of transportation are great, it becomes necessary to chill the fish and seafood on the trawlers be packing in crushed ice or by mechanical refrigeration in order to slow the microbial growth and oxidation until the products are marketed or are proceeded for longer preservation. The time allowable for holding in ice or in chilling storage will vary considerably with the kind of fish, but will not be long in most cases.

If necessary fish previously packaged may be frozen. Freezing kills some but not all the microorganisms present, and growth will take place after thawing if time permits. For deterioration to be protected frozen fish can also be dipped in cold water to form a water glaze at its surface. Then the glazed fish are kept in cold storage rooms at temperature of $-28\text{ }^{\circ}\text{C}$ or lower, use of lower storage temperatures being effective in retarding adverse chemical changes such as oxidation and protein denaturation, which otherwise cause excessive deterioration upon prolonged storage.

Some fish and seafood are packed into cans and then sterilized or pasteurized. The canning operations are relatively standard. The fish is inspected, washed, cut into can length portions. Then cans are filled automatically, the salt is added, the cans are sealed under vacuum and sterilized.

Curing methods include salting, smoking, drying and pickling. Most cured fish have greatly lowered moisture content, this decrease bacterial decomposition. Curing also adds chemicals to fish which further retard spoilage. Benzoic acid, sodium and potassium, nitrite and nitrates have been found to lengthen the keeping time.

Formerly, fish was smoked primarily for its preservation, but now smoking is used primarily for flavour. The smoking may be done at comparatively low temperatures ($26,7$ to $37,8\text{ }^{\circ}\text{C}$) or at high temperatures like 63 to $92\text{ }^{\circ}\text{C}$, which result in partial cooking of the fish.

Pickling of fish may mean salting or acidification with vinegar wine or sour cream. Herring is treated in various ways: salted, spiced and acidified. Various combinations of these treatments coupled with an airtight container preserve the fish, although refrigeration also must be employed for some products.

VI. Answer the following questions about the text.

1. Has fish been a principal food of millions of people?
2. Why is it so?
3. What does preservation of fish involve?
4. What is it necessary to do with fish when outside temperatures are high?
5. What does the effect of freezing consist of?
6. What do standard canning operations include?
7. What do curing methods consist of?
8. What decreases bacterial decomposition in food?
9. What are the ways of herring pickling?

VII. Think and say about:

- 1) the role of fish in diet of people;
- 2) fish preservation methods:
 - a) freezing;
 - b) curing;
 - c) pickling.

Unit XVII

PRESERVATION OF VEGETABLES AND FRUITS

I. Remember the following words and word combinations from the text:

- | | |
|---|--|
| 1) to be rich in carbohydrates | 1) быть богатым углеводами |
| 2) definite harvesting time | 2) определенное время сбора урожая |
| 3) to accelerate growth of microorganisms | 3) ускорить рост микроорганизмов |
| 4) staple food | 4) основной продукт |
| 5) lettuce | 5) салат-латук |
| 6) withering or softening vegetables | 6) увядание или смягчение овощей |
| 7) shrinkage of fruit | 7) усушка фруктов |
| 8) to double the storage time | 8) удвоить время хранения |
| 9) loosely packed small fresh fruits | 9) слабо упакованные маленькие свежие фрукты |
| 10) to cause damage to the tissue | 10) вызывать повреждение ткани |
| 11) microbial counts | 11) количество микробов |
| 12) borax solution | 12) раствор тетраборнокислого натрия |
| 13) hypochlorites | 13) гипохлориты |
| 14) sodium benzoate | 14) бензоат натрия |
| 15) to be antifungal in purpose | 15) быть по назначению противогрибковым |
| 16) killing effect of heat | 16) уничтожающий эффект тепла |
| 17) to aid in preservation | 17) способствовать сохранению |
| 18) on the average | 18) в среднем |
| 19) chlorinated water | 19) хлорированная вода |
| 20) to destroy yeasts | 20) уничтожить дрожжи |

II. Give the Russian Equivalents for the following English words and word combinations:

sodium chloride, high moisture content, to cool promptly, mechanical refrigeration, chilling temperature, air circulation, shrinkage of fruit, borax solution, definite harvesting time, outer surface of fruit, killing effect of heat, to aid in preservation.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|-------------------------------------|--|
| 1) хлорированная вода | 1) precipitation of moisture |
| 2) бензоат натрия | 2) shrinkage of fruit |
| 3) быть по назначению антигрибковым | 3) loosely packed fresh fruit |
| 4) усушка фруктов | 4) staple product |
| 5) осадок влаги | 5) withering of vegetables |
| 6) слабо упакованные свежие фрукты | 6) chlorinated water |
| 7) основной продукт | 7) to accelerate the microbial growth |
| 8) увядание овощей | 8) microbial counts |
| 9) ускорить рост микроорганизмов | 9) to be antifungae chemicals in purpose |
| 10) количество микробов | 10) sodium benzoate |

IV. Translate the following sentences paying attention to the Modal Verbs and their Equivalents.

1. For adequate chilling of each kind of the product air composition and air circulation should be provided.

2. The optimal relative humidity must not be too low at chilling storage.

3. Vegetables and fruit can also be treated with various chemicals.

4. Chlorinated water and borax solution may be used in washing some kinds of vegetables.

5. Fruit can be treated by chemicals using dipping, spraying or wrapping in materials containing some preservatives.

V. Read the text below carefully to find out methods of preservation of vegetables and fruit.

Text

PRESERVATION OF VEGETABLES AND FRUIT

Vegetables and fruit are very important food products. They are characterized by a high moisture content, ranging from 75 to 95 %, are relatively low in protein but rich in carbohydrates, organic acids and their salts, vitamins, minerals and other valuable substances. However fresh vegetables and especially fruit are readily subjected to spoilage, the consumption of each of them being limited by restricted areas of growing and a definite harvesting time. In addition, if their surfaces are moist or have been damaged, growth of some microorganisms is sure to be accelerated.

To preserve these staples or foods or to delay their spoilage chilling, freezing, drying, fermentation, canning or chemical preservatives may be used. Most vegetables and fruit to be preserved without special processing are cooled promptly and kept at chilling temperatures. The chilling is accomplished by use of cold water, ice, mechanical refrigeration or by vacuum cooling (moistening plus evacuation) as used for lettuce. For adequate chilling storage of each kind of the product optimal temperature, relative humidity, air composition and air circulation should be provided. The temperature varies between 6 °C and 10 °C. The optimal relative humidity must not be too low, otherwise the wilting and softening of vegetables or the shrinkage of fruit can occur. It must not also be too high because in this case precipitation of moisture on the surface of the product will favor microbial spoilage. To control the composition of an atmosphere in the storage rooms means to regulate oxygen and carbon dioxide concentration. Ozone in concentrations of 2 to 3 ppm in the atmosphere has been found to double the storage time of loosely packed small fresh fruits, such as grapes, strawberries, raspberries.



The freezing process reduces the number of organisms, but on the average about half of them are killed. This method is not widely used for vegetables and fruit preservation as it causes some damage to their tissues, resulting in wilting and release of some juice.

Drying by heat destroys yeasts and most bacteria, but spores of bacteria and molds usually survive. Microbial counts on the dried vegetables appear to be considerably higher than on the dried fruit, because these are higher numbers on them before drying and most vegetables are less acid than fruit and consequently the killing effect of heat is less.

Vegetables and fruit can also be treated with various chemicals before or during storage to aid in their preservation. Chlorinated water and borax solution may be used in washing some kinds of vegetables. Sodium chloride is the only added chemical preservative in common use. Fruit can be treated by chemicals by dipping, spraying or wrapping in materials containing some preservatives. Among substances applied to the outer surface of fruit are waxes, hypochlorites, alkaline sodium and others. As a gas or fog about the fruit, carbon dioxide, ozone and ethylene plus chlorinated hydrocarbons have been tried. Sulphur dioxide and sodium benzoate are preservatives that have been added directly to fruit, most of the chemicals mentioned having been primarily antifungal in purpose.

VI. Answer the following questions about the text.

1. What are vegetables and fruit characterized by?
2. What is the consumption of fruit limited by?
3. What methods should be used to preserve vegetables and fruit?
4. What is the chilling of vegetables and fruit accomplished by?
5. What conditions should be provided to adequate storage by chilling?
6. What is it necessary to do in order to control the composition of the atmosphere in the storage room?
7. What does the freezing process of vegetables and fruit enable to do?
8. What chemicals are used for vegetables and fruits treatment?

VII. Think and say about:

- 1) the value of vegetables and fruits for man;
- 2) methods to preserve vegetables and fruits from spoilage;
- 3) the necessary conditions of their storage.

Unit XVIII

BREAD-MAKING AND PRESERVATION OF BAKERY

I. Remember the following word and word combinations from the text:

- | | |
|-------------------------------------|---|
| 1) bread-making | 1) хлебопечение |
| 2) daily capacity | 2) суточная производительность |
| 3) bakery products | 3) хлебобулочные изделия |
| 4) mechanical bakeries | 4) механические пекарни |
| 5) to make dough | 5) приготовить тесто |
| 6) non-fat dry milk solids | 6) сухое обезжиренное молоко |
| 7) to add emulsifiers | 7) добавлять эмульгаторы |
| 8) to mix ingredients | 8) смешать ингредиенты |
| 9) to assure a uniform distribution | 9) обеспечить равномерное распределение |
| 10) to form a homogeneous mass | 10) сформировать однородную массу |
| 11) developer | 11) тестомесительная машина |
| 12) to knead | 12) месить тесто |
| 13) fermentation chamber | 13) камера брожения |
| 14) to acquire a spongy character | 14) приобрести губчатый характер |
| 15) divider | 15) тестоделительная машина |
| 16) rounder | 16) тестоокруглительная машина |
| 17) rounded dough balls | 17) округлые шарики из теста |
| 18) final proofing | 18) окончательная проверка |
| 19) to be wrapped in waxed paper | 19) обернуть вощёной бумагой |

II. Give the Russian equivalents for the following English words and word combinations:

bread making, to make dough, divider, to assure a uniform distribution, large-scale industry, to form a homogeneous mass, rounded dough balls, assortment of bread, to acquire a spongy character, the dough mass, proper packaging.

III. Find the English Equivalents for the following Russian words and word combinations in the right column:

- | | |
|-------------------------------------|-------------------------------|
| 1) буханка хлеба | 1) non-fat dry milk solids |
| 2) механические пекарни | 2) a divider |
| 3) сухое обезжиренное
молоко | 3) to form a homogeneous mass |
| 4) смешивать ингредиенты | 4) to wrap in waxed paper |
| 5) добавлять эмульгаторы | 5) a loaf of bread |
| 6) сформировать однородную
массу | 6) bakery products |
| 7) обернуть вощёной бумагой | 7) to knead dough |
| 8) хлебобулочные изделия | 8) mechanical bakeries |
| 9) замесить тесто | 9) to add emulsifiers |
| 10) тестоделительная машина | 10) to mix ingredients |

IV. Translate the following sentences paying attention to the Passive Voice.

1. Bread is produced by making dough from cereal flour, water, yeast, salt and sugar, non-fat dry milk solids, lard, and emulsifiers.

2. The developed dough is taken to the fermentation chamber.

3. Through the heat action the dough mass is transformed into a light, porous and easily digestible product.

4. The fermented dough flows into a dividing machine where it is cut into pieces of proper weight.

5. Mold growth can be prevented by cold storage, adequate packing of bakery products.

V. Read the text below carefully to find out technology of bread making and preservation of bakery products.

Text

BREAD-MAKING AND PRESERVATION OF BAKERY PRODUCTS

Bread is certain to be the basis of man's food and valuable source of vegetable protein, vitamins of B complex and some minerals such as calcium and iron. Nowadays, bread-making is a large-scale industry with highly complex technology, the daily capacity of mechanical bakeries exceeding 250,000 tons. The assortment of bread and bakery products is much wider than in any other country and includes about 600 names.

Bread is produced by making dough from cereal flour, water, yeast, salt and sugar, non-fat dry milk solids, lard and emulsifiers being added if it is necessary. The ingredients are thoroughly mixed to assure a uniform distribution and to form a homogeneous mass, the time period of this operation being exactly determined and the temperature being carefully controlled. The dough is next passed into a developer where it is kneaded to bring about the desired structure. The developed dough is taken to the fermentation chamber where it undergoes the second main phase of bread production called fermentation. During this process the yeasts act upon the sugar transforming them into carbon dioxide and alcohol, the dough increasing in size and acquiring a light, spongy character. The fermented dough flows into a dividing machine where it is cut into pieces of proper weight corresponding to single units of the finished product.



When the dough pieces leave the divider and are conveyed to the rounder, they are irregular in shape with sticky cut surfaces from which the gas can readily diffuse. The function of the rounder is to make a smooth and relatively thick skin around the dough pieces and to form them into balls. The rounded dough balls are next subjected to a brief period of fermentation called the intermediate proof, and molded into loaves ready to be placed in the baking pans. Then the molded dough pieces are subjected to the final proofing in large chambers and are sent to the oven.

The actual baking process is really the last and most important step in the production of bakery products. Through the heat action the dough mass is transformed into a light, porous, easily digestible product, the changes involved being numerous and complex. All of the reactions involved in changing the dough into bread must occur in certain sequence and require controlled conditions.

Bread and bakery products are known to be perishable because of their becoming stale or because of mold growth. Staling appears to be associated with changes in the starch, and the bakery products become hard and dry. Mold growth develops in wrapped goods when humidity is high and temperature is also fairly high.

Staling can be prevented by proper packaging, freezing or the addition of emulsifying agents, milk or small amounts of fat. Bread and baked products can be wrapped in waxed paper or in plastic film or may be packed in carton which is completely impervious to moisture. Bread frozen and maintained at $-28\text{ }^{\circ}\text{C}$ retains its freshness for many months. Mold growth can be prevented by cold storage, adequate packaging, chemical preservatives or irradiation. A storage temperature of about $4,4$ to $7,2\text{ }^{\circ}\text{C}$ is recommended for the dry products.

VI. Answer the following questions about the text.

1. What is the basis of man's food?
2. What is bread making now?
3. How is bread produced?
4. What is the role of yeast in dough making?
5. What is done with dough in a divider?
6. What is the last important step in bakery process?
7. Why are bakery products perishable?
8. How can staling be prevented?
9. What is it necessary to do in order to prevent mold growth in bakery products?

VII. Think and say about:

- 1) the role of bread in man's food;
- 2) method of bread making;
- 3) prevention of spoilage of bakery products (staling, mold growth).

Unit XIX

HURDLE TECHNOLOGY

I. Remember the following words and word combinations from the text:

- | | |
|---|--|
| 1) hurdle technology | 1) барьерная технология |
| 2) novel foods | 2) новые продукты |
| 3) to do control of microbial spoilage | 3) контролировать порчу микроорганизмов |
| 4) food poisoning | 4) отравление продуктов |
| 5) redox potential | 5) окислительно-восстановительный потенциал |
| 6) to ensure microbial stability | 6) обеспечивать стабильность микроорганизмов |
| 7) to overcome a hurdle | 7) преодолевать барьер |
| 8) to act synergistically | 8) действовать синергетически (сопутствовать друг другу) |
| 9) homeostasis | 9) гомеостаз (внутреннее равновесие организма) |
| 10) to disturb homeostasis | 10) нарушать гомеостаз |
| 11) mild heat processing | 11) умеренная тепловая обработка |
| 12) modified atmosphere packaging | 12) упаковка в газовой атмосфере регулируемого состава |
| 13) ethanol vapours | 13) пары этанола |
| 14) high moisture fruit products | 14) фрукты с высоким содержанием влаги |
| 15) purees banana | 15) банановое пюре |
| 16) addition of antimicrobials | 16) добавление антимикробных препаратов |
| 17) potassium sorbate | 17) сорбат калия |
| 18) sodium sulfite | 18) сульфит натрия |
| 19) to be of special interest | 19) представлять особый интерес |
| 20) to be inexpensive and simple but reliable | 20) быть недорогим и простым, но надёжным |

II. Give the Russian equivalents for the following English words and word combinations:

microbial stability, food preservation techniques, early stages of application, physical and chemical parameters, food poisoning, interaction of processing methods, to be very successful, to keep microorganisms in food under control, water activity reduction, an inherent factor.

III. Find the English equivalents for the following Russian words and word combinations in the right column:

- | | |
|---|--|
| 1) препятствующий эффект | 1) fresh-product characteristics |
| 2) необходимый процесс брожения | 2) cell membrane |
| 3) барьерная технология | 3) complex interaction of parameters |
| 4) контролировать порчу микроорганизмов | 4) to act synergistically |
| 5) сложное взаимодействие параметров | 5) different targets |
| 6) клеточная мембрана | 6) desired fermentation process |
| 7) нарушать гомеостаз | 7) hurdle effect |
| 8) действовать синергетически | 8) to disturb homeostasis |
| 9) различные цели | 9) hurdle technology |
| 10) характеристики свежего продукта | 10) to control microorganisms spoilage |

IV. Translate the following sentences with the modal verbs and their equivalents.

1. The hurdles must keep the formal population of microorganisms in food under control.

2. The microorganisms present in a food product should not be able to overcome the hurdles.

3. A synergistic effect could become true if the hurdles hit different targets in food within the microbial cell.

4. Foods based on hurdle technology can be found in industrialized and developing countries.

5. So food preservation procedures should be inexpensive and simple, but reliable.

V. Read the text below carefully to find out what hurdle technology is.

Text

HURDLE TECHNOLOGY

Along with traditional food preservation techniques there is a large and growing number of improved and radically new ones, that are being researched or are in the early stages of application, hurdle technology being one of them.

The microbial stability and safety of most traditional and novel foods are based on a combination of several physical and chemical parameters (hurdles) which can be adjusted and should not be overcome by the microorganisms present. This is illustrated by the so-called hurdle effect. The hurdle effect is of fundamental importance for the preservation of foods, since the hurdles in a stable product control microbial spoilage, food poisoning and, in some instances, the desired fermentation process.

The hurdle concept illustrates only the well-known fact that complex interactions of processing methods, storage temperatures, water activity, pH, redox potential, etc., inhibit or inactivate various microorganisms, thus ensuring microbial stability and safety of foods.

Hurdle technology (synonymously called combined methods, combined processes, combination preservation, combination techniques) proved to be very successful and it is widely used in the preservation of meat, dairy products, fruits and vegetables.

For each stable and safe food a certain set of hurdles (factors) is inherent, which differs in quality and intensity depending on the particular product. However, in any case, the hurdles must keep the formal population of microorganisms in this food under control. The

microorganisms present in a food product should not be able to overcome the hurdles, otherwise the food will spoil.

For foods preserved by hurdle technology different hurdles may act synergistically. A synergistic effect could become true if the hurdles in a food hit, at the same time, different targets (e.g. cell membrane, enzyme systems, pH, water activity, redox potential) within the microbial cell and thus disturb the internal equilibrium of organisms (homeostasis). In practical terms this could mean that it is more effective to use, for example, different preservatives in small amounts than only one preservative in larger amounts, because different preservatives might hit different targets within the bacterial cell, and thus act synergistically.

Foods based on hurdle technology can be found in industrialized as well as in developing countries. For example, some dozens of meat products with fresh-product characteristics, but stable and safe without refrigeration for at least 6 days at 30 °C are being manufactured in Germany. An Italian pasta product was stabilized for several weeks by using as hurdles a water activity reduction and mild heat processing, as well as modified atmosphere packaging or ethanol vapor during storage, combined with moderate chilling temperatures. Combined processes for the preservation of high moisture fruit products have been developed in several Latin American countries and have been applied to peach halves, pineapple slices, mango slices and puree, papaya slices, puree of banana as well as whole figs and strawberries. These new technologies were based on combination of a mild heat treatment (blanching for 1 – 2 minutes with saturated steam), slight reduction in water activity by the addition of glucose or sucrose, lowering pH by the addition of citric or phosphoric acids and the addition of antimicrobials (potassium sorbate or sodium benzoate, and sodium sulfite or sodium bisulfite) to the syrup of the products. These products stabilized by hurdle technology proved to be stored during 3 – 8 months at 25 – 35 °C.

For developing countries, foods storable without refrigeration are of special interest, because refrigeration (energy) is costly and not continuously available. So food preservation procedures should be inexpensive and simple, but reliable.

VI. Answer the following questions about the text.

1. What is a new method of food preparation?
2. What is the safety as most novel foods based on?
3. What does a hurdle effect mean?
4. Why is a hurdle effect of fundamental importance for the preservation of foods?
5. What does hurdle concept illustrate?
6. What role do hurdles play in food microorganism?
7. How many hurdles act in foods?
8. What example of food preservation by hurdle technology can you give?
9. What were these new technologies based on?
10. Why is this technology of special interest for the developing counties?

VII. Think and say about:

- 1) the basis of the microbial stability of novel foods;
- 2) the essence of the hurdle effect in preservation of food;
- 3) the action of different hurdles within the microbial cell;
- 4) the advantages of food preservation by using hurdle technology in developed and developing countries.

SUPPLEMENTARY READING

Tea Time – cakes, gateaux and icings

Learning to bake perfectly is something anyone can learn with a little care and patience. Even if you have had no experience in baking, if you follow my tips for easy baking to the letter, you should have no difficulty in making any one the delicious cakes in this chapter – whether it is a simple sponge or one of the more elaborate gateaux.

Cream horns

Cooking time 15 minutes.

You will need:

8 oz. puff pastry; little castor sugar; egg white; icing sugar; whipped or mock cream; jam; milk.

1. Roll out the pastry until about the thickness of a penny.
2. Cut it into long strips 1 inch wide.
3. If you can cut these ‘on the cross’ you will get a better shaped cornet.
4. Roll carefully round the horn cases (these metal cases can be bought) brush lightly with milk on the joints.
5. Be careful not to stretch the pastry.
6. Brush with either a little more milk and dust with castor sugar or use egg white and sugar.
7. Bake for 10 – 15 minutes near the top of a very hot oven (475 °F)
8. Cool slightly, then gently withdraw the cases.
9. When the pastry is quite cold fill with jam and cream. Dust with icing sugar.

Lemon curd tarts

Cooking time 12 – 15 minutes.

You will need:

6 oz. short crust pastry; 6 – 8 oz. lemon curd.

1. Roll out pastry and line approximately 12 patty tins.
2. Prick lightly with a fork to prevent pastry rising in cooking.
3. Either bake the pastry cases 'blind', i.e. with no filling OR put in a little curd.
4. Bake just above the centre of a moderately hot oven – if filling is used – or a hot oven with no filling (400 – 450 °F).
5. Either fill with curd the moment they come from the oven, or add extra curd. Or leave until quite cold then fill with curd.

Mixed fruit fingers

Cooking time 30 minutes.

You will need:

5 oz. margarine; milk to mix; 2 oz. glace cherries; 2 oz. dates; icing sugar; 3 oz. sugar; 8 oz. flour; 2 oz. chopped nuts; 2 oz. sultanas.

1. Rub 4 oz. of the margarine into the flour.
2. Add 2 oz. sugar and enough milk to make a firm dough.
3. Roll out half the dough until a neat oblong about ¼ inch thick and put on an ungreased baking tin.
4. Put remainder of margarine and sugar into a saucepan.
5. Heat until margarine has melted, then stir in the cherries, nuts and dates (all cut into small pieces) and the sultanas.
6. Mix well then spread over the dough.
7. Roll out the rest of the dough and cover the filling.
8. Put into the centre of a moderate oven (375 °F) for 25 – 30 minutes. Mark into fingers while still hot but leave on tin to cool.
9. When cold dust with icing sugar.

Fruit buns

You will need:

12 oz. plain flour; good pinch salt; 1 oz. margarine or cooking fat; 2 – 4 oz. dried fruit; 1 – 2 oz. candied peel; ½ oz. yeast; approximately 1 ½ gills tepid water, milk and water, or milk; 1 – 2 oz. sugar; 1 oz. sugar for glaze; 1 tablespoon water.

1. Cream the yeast with 1 teaspoon of the sugar.
2. Add the tepid liquid and a sprinkling flour.
3. Put into a warm place until the 'sponge' breaks through.
4. Meanwhile sieve the flour and salt into a warm bowl, rub in the margarine and add the sugar, fruit and peel.
5. When ready, work in the yeast liquid and knead thoroughly.
6. Put into a warm place for approximately 1 hour to 'prove' i.e. until the dough just about doubles its original size.
7. Form into round buns, 'prove' for 15 minutes on warm tray and bake for 10 minutes near the top of a very hot oven (475 °F).
8. Mix the sugar with 1 tablespoon of water and the moment the buns come from the oven, brush with this to give an attractive glaze.

Economical chocolate cake

Cooking time 30 minutes.

You will need:

1 oz. cocoa; 3 oz. margarine; 1 egg; 2 oz. bar of chocolate; chopped nuts; 1 gill milk; 5 oz. castor sugar; 5 oz. self-rising flour; few drops vanilla essence; grated chocolate.

1. Boil together the cocoa, milk and 2 oz. of the castor sugar.
2. Allow the mixture to cool.
3. Cream together the rest of the sugar and the margarine.
4. Add 1 beaten egg and a few drops vanilla essence.
5. Sieve the flour.
6. Stir the cocoa liquid and the flour alternately into the creamed margarine until smooth and soft.
7. Line the bottom of a 9-inch sandwich tin with greased paper, put in this mixture and bake for approximately 30 minutes (375 °F) until firm and 'spongy'.
8. When the cake is cold, melt a 2 oz. bar of chocolate in a basin over hot water, adding 2 teaspoons hot water to the chocolate.
9. Spread over the cake and allow to harden.
10. Decorate with chopped nuts and grated chocolate.

Main meal – meat

Meat is one of the major foods bought in most households and since its price is high, it is worth while using it in the wisest possible way. Remember that it does pay you to buy cheaper pieces of meat for they give just as much food value to the family and with careful cooking can be just as delicious.

To make a hotpot

This is not only a very excellent way of serving stewing meat, but a labour-saving one too, since the meat and all the vegetables, including the potatoes, can be cooked and served in the same dish. All stewing pieces of beef, veal, pork or mutton and lamb are suitable. With the fatter meats, i.e. pork and mutton, it is a good idea to trim the surplus fat from the meat at the beginning and use this fat for frying lean meat and vegetables.

1. Toss meat and any vegetables – carrots, sliced onions, crushed garlic, sliced peppers etc. in a little fat then season well.

2. Put a layer of the meat and vegetable mixture, then a layer of uncooked sliced potatoes in the casserole, continue like this, seasoning each layer of potatoes well – and end with a layer of potatoes.

3. Pour over a small amount of stock.

4. Put a little fat on top of the potatoes.

5. Cover with the casserole lid or foil and cook slowly for about 2 ½ hours.

6. Remove the lid, so that the top layer of potatoes can become crisp and brown.

7. Serve with a green salad or green vegetables.

Irish stew

Cooking time just over 2 hours.

You will need:

1 lb. scrag or middle neck of lamb or mutton; pepper water; 8 oz. onions; 1 lb. potatoes; salt; peas and carrots.

1. Cut meat into neat pieces.
2. If using new potatoes cut 1 or 2 in halves, or if using old potatoes cut large one into small slices.
3. Slice the onions.
4. Put the meat, half the pieces of potato and the sliced onions into the pan.
5. Add about $\frac{3}{4}$ pint water and plenty of salt and pepper.
6. Bring slowly to the boil, remove any scum.
7. Lower the heat and simmer gently for just over 1 $\frac{1}{2}$ hours.
8. Add the rest of the potatoes, with a little more salt, and continue cooking for about 40 minutes.
9. To serve, pile the meat and stock in the centre of the hot dish with the potatoes round and a garnish of the freshly cooked peas and carrots.

Meat mould

Cooking time 1 $\frac{1}{2}$ hours.

You will need:

12 oz. streaky bacon; 3 oz. breadcrumbs; pepper; 1 gill stock; 8 oz. minced beef; grated nutmeg; salt; 1 egg.

1. Mince the bacon and add the minced beef, breadcrumbs and seasoning.
2. Pour in the stock and breamen egg.
3. Beat the mixture well and turn into a greased basin.
4. Cover the basin with greaseproof paper and boil or steam for 1 $\frac{1}{2}$ hours.
5. Turn out when cold and serve on a bed of lettuce and tomatoes.

Steak and kidney pie

Cooking time nearly 2 hours or about 1 hour if meat is pre-cooked.

You will need:

12 oz. – 1 lb. stewing steak, 1 level tablespoon flour; good pinch pepper; 6 oz. short crust or flaky pastry; 2 lamb's or sheep's kidneys or about 4 oz. ox kidney; $\frac{1}{2}$ teaspoon salt; water or stock.

1. Cut the steak and kidney into small pieces and roll in the seasoned flour.
2. Put the meat into a pie dish or individual dishes, seeing that the kidney is well distributed.
3. Pour over enough water or stock to come halfway up the meat, any more would boil out in cooking.

With flaky pastry

1. Roll out the pastry and cover the pie.
2. Decorate and glaze.
3. Bake in the centre of a hot oven (450 °F) for about 25 minutes to give the pastry a chance to rise.
4. Put a piece of paper over the top and lower the heat to very moderate (350 °F) to make sure the meat is cooked.
5. Give it about a further 1 ½ hours.
6. When serving have a sauce boat of hot stock available to pour into the pie to make extra gravy if you wish.

With short crust pastry

If using this type of crust, it is probably better to pre-cook the meat as in chicken pie, then bake for 1 hour only.

Sausage and vegetable savoury

Cooking time 30 minutes.

You will need:

1 oz. margarine, 4 rashers bacon, 1 lb. pork sausages, 1 ½ lb. potatoes, 1 can vegetable soup, salt, pepper.

1. Cook the potatoes and mash them with the margarine.
2. Cut bacon into small pieces and fry gently until crisp.
3. Remove.
4. Fry sausages for approximately 15 – 20 minutes.
5. Put a layer of potatoes into a deep dish.
6. Cover with sausages and bacon.
7. Pour over gently heated, seasoned vegetable soup.

Fish dishes

How to tell if fish is fresh

1. Stale fish is not only most unpleasant but quite a dangerous food to serve.
2. The way one tells if fish is fresh is if it is firm, pleasant smelling and the eyes and scales look bright.
3. With shell fish it is fresh if a bright colour, in the case of lobsters and prawns if the tails spring back after being pulled out. It is of good quality if it feels weighty for the size, poor quality shell fish feels light because it is full of water.
4. Whilst you can buy many fish throughout the year the fish buying guide does give you the best times to have them.

Baked fish

Most fish can be baked, but care should be taken with fillets of fish to keep them moist.

1. Butter the dish well.
2. Put in fish and season.
3. Add a little stock, milk or white wine to keep fish moist. (Use the stock in sauces).
4. Cover with buttered paper.
5. Place in a moderate to moderately hot oven (375 – 400 °F).
6. Bake fillets of plaice, sole, etc. for approximately 12 – 20 minutes.
7. Bake cutlets of white fish for approximately 20 minutes.
8. Bake whole fish for approximately 12 minutes per lb. (if stuffed weigh with stuffing).

Grilled fish

Most fish is suitable for grilling.

1. Make sure that the grill is hot before you begin cooking.
2. Keep the fish well brushed with melted butter so that it doesn't dry.

3. Most fillets can be grilled without turning. Allow approximately 4 minutes, turning the heat down after the first 2 – 3 minutes if desired.

4. If fillets are very thick they must be turned. Grill quickly for 2 – 3 minutes on either side then reduce heat for a further 3 – 4 minutes.

5. Grilled mushrooms which can be cooked at the same time are an ideal accompaniment for any grilled fish.

Fried fish

This is one of the most popular ways of serving any fish. It is important to remember the following:

1. Dry the fish well and coat very thinly with seasoned flour.

2. Dip in fritter batter or in beaten egg and crumbs. Shake off surplus crumbs or allow excess batter to drain away.

3. For shallow frying make sure the fat (which can be oil, cooking fat, butter) is hot. Put in the fish, cook steadily until brown, turn and cook on the other side. If using deep fat make sure this is not too hot otherwise the outside browns before the fish is cooked.

4. Always drain fried fish. Use kitchen paper. The latest absorbent kitchen rolls are excellent, but never greaseproof paper.

5. Do not overcook the fish.

6. For shallow frying allow 2 – 3 minutes on either side for filleted fish, 4-5 minutes for thicker fish cutlets or whole fish.

7. For deep frying allow 3 – 4 minutes total cooking time for fillets, 7 – 8 minutes for whole fish or cutlets.

Light Supper Snacks; Salads, Salad Dressings and Savoury Biscuits

Most families have one main meal and one lighter meal each day, and the recipes following are equally suitable for supper or luncheon. In addition to those contained in this chapter you will find the omelettes in the breakfast section, and some of the recipes in the section on vegetables are good light snacks. Although termed a 'snack' a well balanced meal should have a protein basis-and egg and cheese are ideal for this.

You will also find a number of recipes for salads and salad dressings. Don't serve salads just in summer- time, remember when lettuce is expensive that shredded cabbage will take its place very well indeed. A salad blends well with many hot dishes, particularly roast chicken, grilled or fried steak or chips.

Cheese and vegetable pie

Cooking time 25 minutes.

You will need: 8 oz. cheese; about 8 oz. runner beans; few carrots, peas, etc.; 1 (1/2) oz. butter or (1/2) pint milk margarine; few breadcrumbs 1 (1/2) oz.; flour small cauliflower; little extra butter.

1. Prepare the vegetables.
2. Cook for about 15 minutes in boiling salted water until just tender.
3. Meanwhile grate the cheese.
4. Prepare the sauce. Melt butter in saucepan, combine with flour to make a smooth mixture.
5. Add milk slowly, stirring constantly, until thick and smooth.
6. Add 1 gill stock from the vegetables and cook together until well blended.
7. Season well.
8. Stir in 6 oz. cheese and all the vegetables.
9. Put into a hot pie dish and cover with the rest of the cheese, breadcrumbs and knobs of butter.
10. Brown under the grill.

Macaroni cheese

Cooking time approximately 40 minutes for cooking macaroni and browning in oven.

You will need: 3 oz. macaroni; 1 tablespoon crisp; (1/2) pint cheese sauce; breadcrumbs; 1 oz. margarine or butter; 2 oz. grated cheese.

*If you like a more moist macaroni cheese, then use $\frac{3}{4}$ pint cheese sauce to the same quantity of cooked macaroni.

1. Put the macaroni into about 1 (1/2) pints boiling water, to which you have added 1 level tea-spoon salt.
2. Cook steadily until the macaroni is just tender.
3. Do not overcook, elbow-length quick-cooking macaroni takes only 7 minutes.
4. Drain in a colander, arrange it in a hot dish and pour the cheese sauce over it.
5. Sprinkle cheese and breadcrumbs on top and put the margarine or butter on in several small pieces.
6. Either bake for about 25 minutes near the top of a moderately hot oven (400 °F – Gas Mark 5) until crisp and brown, or put under a hot grill.
7. To get rid of starchiness of macaroni it can be rinsed under hot tap before using.

Scotch eggs

Cooking time 15 minutes plus time for boiling eggs.

You will need: 4 eggs; 1 egg for coating; 2 tablespoons flour; (1/2) gill milk for coating; 12 oz. sausage meat deep fat for frying; breadcrumbs.

1. Hard-boil the eggs and cool them. Shell them.
2. Roll them lightly in flour.
3. Divide the sausage meat into 4, fold evenly and smooth round the lightly floured eggs.
4. Coat these with the beaten egg and milk blended together, roll each firmly in breadcrumbs.
5. Fry steadily in fat and drain.
6. Remember that the sausage meat has to cook so do not hurry the frying process.
7. Cut each Scotch egg in half with a sharp knife dipped in hot water.
8. Serve hot with tomato sauce or cold with salad.

To make good salads

All the ingredients should be as fresh as possible for a salad since you lose both vitamin value and a good appearance if they are limp. Salads vary a great deal in the ingredients that are put into them. Today it is accepted that one can mix fruit, nuts, etc. in with green lettuce, etc. for a salad. In the same way it is perfectly correct, and very popular, to serve a cold salad with hot, grilled or roasted dishes.

To prepare ingredients for salads

1. Lettuce – endive, cabbage and all other green vegetables, should be well washed and dried.

If shredding make sure you have a stainless silver knife so they are not discoloured.

Do not shred too soon before serving the salad.

2. Cucumber – can be peeled or not according personal taste.

To give an attractive effect to the peel, score the skin by dragging the point of the fork down very firmly.

3. Tomatoes – can be skinned by lowering carefully into hot water for a minute and then into cold water. They can then be sliced.

If the skin is left on, cut into water lily shapes. To do this use a sharp knife. Insert the point of the knife into the tomato and cut into a Vandyke pattern tomato, each time feeling the knife going through to the centre. When you have completed doing this pull the tomato gently apart and you have 2 halves of a water lily.

4. Radishes – Wash, dry and slice.

Or cut into water lilies as for tomatoes.

Or with practice you can make more elaborate shapes by cutting the actual skin away from the centre of the radish in petal shapes.

If time permits though; the easiest way to make a flower is to cut the radish from the top into about 8 sections.

Don't cut right down to the bottom.

Put into very cold water for an hour or so and these will open up.

5. Celery – should either be diced or cut into thin strips. Then put into iced or cold water when the strips will form celery curls.

Egg salads

Hard-boiled eggs can be served in salads whole or in halves.

1. To give a more unusual salad halve the eggs carefully.
2. Remove the yolks and mash with butter or mayonnaise and seasoning.
3. These can then be blended with chutney or curry powder, chopped shrimps or prawns, diced ham, or with grated cheese.
4. The yolk is then piled back into the white case.
5. Serve on a bed of lettuce, or cress garnished with radishes, cucumber, tomato, etc.
6. Although hard-boiled eggs are generally used as a basis for salads, well-flavoured scrambled egg could be used instead. Garnish with chopped chives and/or parsley.

Fish salads

Most fish is excellent in salads.

If using shell fish-lobster, prawns, crab, etc.:

1. They are prepared either by shelling, or removing the meat from the shells.
2. Mixing with mayonnaise.
3. Serve on a bed of lettuce, etc.
4. Crab and lobster can be served in the shells.
5. Be careful to remove the stomach from crab and the grey fingers-and the intestinal vein and stomach from lobster.
6. The claws are cracked, and the meat removed from these and arranged either beside the shell or mixed with the meat in the shells.

If using white fish

1. Cook carefully, taking care not to over-cook.
2. Make into rather large flakes.
3. Blend with mayonnaise and pile into pyramid shapes on the green salad.
4. It can be mixed with a little shell fish.

If using oily fish

Herrings and mackerel are excellent in salads.

1. They can be grilled or fried.
2. Then blend the flesh flakes with a little oil and vinegar and seasoning in a salad.
3. An even better way though is to souse the fish.
4. Cook in equal quantities of vinegar and water.
5. Add seasonings, spices to taste and cook slowly until the fish is tender.
6. Allow to cool in the liquid.

Orange salad

You will need: 2 large oranges; good pinch salt; lettuce; pepper: sugar; 1 (1/2) tablespoons oil; 1 small teaspoon; 1 (1/2) tablespoons vinegar mustard.

1. Wash and dry lettuce and arrange on small plates.
2. Peel oranges and remove outside pith then, using a very sharp knife, cut sections from the orange.
3. Arrange on the lettuce.
4. Put the mustard on to a flat plate, add the seasonings, and gradually blend in the oil and vinegar.
5. Pour over the salad.

CONCLUSION

В пособии рассмотрены такие проблемы производства продуктов питания, как состав пищевых продуктов и их переработка; оборудование, персонал, способы хранения и др.

Основная цель пособия – обеспечить планомерную работу студентов (как под руководством преподавателя, так и самостоятельно), направленную на изучение и извлечение из представленных текстов когнитивной информации, а также её использование в процессе восприятия и понимания содержания прочитанного.

Пособие включает целевые задания к текстам, языковые и речевые упражнения к ним. Тексты взяты из оригинальной литературы, информативны и отражают современные тенденции в области технологии производства высококачественных продуктов питания растительного происхождения. Структура модулей и последовательность изложения учебной информации однотипны, что облегчает усвоение материала и понимание задач, поставленных в упражнениях.

Пособие завершают тексты для дополнительного чтения, предназначенные для самостоятельного освоения студентами.

Таким образом, четкая структура пособия, в котором предложены новые пути отбора и распределения учебного материала, построения последовательной системы упражнений, может помочь преподавателям правильно организовать учебный процесс по обучению чтению оригинальной литературы и извлечению необходимой когнитивной информации.

BIBLIOGRAPHY

Основная литература

1. *Нестерова, Н. Б.* Английский язык: Food Technology : учеб. пособие / Н. Б. Нестерова. – СПб. : Университет ИТМО, 2015. – 111 с.
2. *Ганиева, И. М.* Пособие по профессиональному английскому языку для специальности «Технология и организация производства предприятий продукции питания» [Электронный ресурс] / И. М. Ганиева. – Режим доступа: <http://studvos.ru/> (дата обращения: 15.05.2019).
3. *Готовцева, И. П.* Продукты питания из растительного сырья : учеб. пособие на англ. яз. / И. П. Готовцева, И. В. Капустин, Л. А. Лебедева. – М. : Росинформагротех, 2017. – 121 с. – ISBN 978-5-7367-1323-3.
4. *Дятел, О. В.* Английский язык : учеб. пособие / О. В. Дятел. – Магнитогорск : МГТУ им. Г. И. Носова, 2015. – 72 с.

Дополнительная литература

1. *Нестерова, Н. Б.* Английский язык. Food Manufacturing Processes : учеб. пособие / Н. Б. Нестерова. – СПб. : НИУ ИТМО : ИХиБТ, 2013. – 90 с.
2. *Соколова, Л. И.* Английский язык : Страноведение и речевой этикет : учеб. пособие / Л. И. Соколова, Л. В. Юрьева. – СПб. : НИУ ИТМО : ИХиБТ, 2013. – 59 с.

CONTENTS

PREFACE	3
Unit I. OPTIMIZATION OF INDUSTRIAL FOOD PROCESSING	4
Unit II. COMPOSITION OF FOOD	8
Unit III. PROTEINS, FATS AND CARBOHYDRATES	12
Unit IV. VITAMINS, MINERALS AND WATER.....	16
Unit V. FOOD PREPARATION.....	20
Unit VI. EQUIPMENT AND UTENSILS	24
Unit VII. CLEANING, SANITIZING THE EQUIPMENT AND UTENSILS	28
Unit VIII. EQUIPMENT, UTENSILS AND TABLEWARE STORAGE.....	33
Unit IX. FOOD PRESERVATION	37
Unit X. PRESERVATION BY USE OF HIGH TEMPERATURES	42
Unit XI. PRESERVATION BY USE OF LOW TEMPERATURES.....	46
Unit XII. THE CANNING PROCESS.....	51
Unit XIII. DEHYDRATION	56
Unit XIV. PRESERVATION OF MILK AND DAIRY PRODUCTS.....	60
Unit XV. PRESERVATION OF MEAT.....	65
Unit XVI. FISH PRESERVATION	70
Unit XVII. PRESERVATION OF VEGETABLES AND FRUITS.....	75
Unit XVIII. BREAD-MAKING AND PRESERVATION OF BAKERY....	79
Unit XIX. HURDLE TECHNOLOGY	83
SUPPLEMENTARY READING.....	88
CONCLUSION	101
BIBLIOGRAPHY	102

Учебное издание

ЯШИНА Нина Кузьминична

FOOD TECHNOLOGY

Учебно-практическое пособие по обучению чтению на английском языке

Редактор Е. А. Лебедева

Технический редактор Т. В. Евстюничева

Корректор Н. В. Пустовойтова

Корректор иностранного языка Т. И. Койкова

Компьютерная верстка Л. В. Макаровой

Выпускающий редактор А. А. Амирсейидова

Подписано в печать 23.06.20.

Формат 60×84/16. Усл. печ. л. 6,05. Тираж 50 экз.

Заказ

Издательство

Владимирского государственного университета
имени Александра Григорьевича и Николая Григорьевича Столетовых.
600000, Владимир, ул. Горького, 87.