

Ministry of Health of the Republic of Belarus
Education Establishment
"Gomel State Medical University"
Normal Physiology Department

It was discussed at the department meeting 30.08.16
The protocol № 8

METHODICAL INSTRUCTION

for carrying out classes by teachers with the 2nd course students
of Faculty for training specialists for foreign countries (teaching in English)
on normal physiology

General time of the class 4 hours.

Topic: Digestion in oral cavity and stomach

**1. THE STUDYING AND EDUCATIONAL PURPOSES, THE MOTIVATION FOR
ASSIMILATION OF THE SUBJECT, REQUIREMENTS TO THE INITIAL LEVEL OF
KNOWLEDGE**

Purpose of the class

The student has to know essence and value of digestion for activity of an organism, features of digestion in oral cavity and stomach.

Motivational characteristic

Chemical processing of food begins in oral cavity with participation of enzymes of saliva: alpha-amylase, dextrinase and maltase (alpha-glucosidase). Certain conditions are necessary for activity of enzymes of saliva: the alkaline environment and temperature 37-38°C. Therefore the medical student has to master a technique of research of conditions of saliva enzymes effect on starch. To know features of digestion in oral cavity and stomach.

Tasks of the class

In the course of the occupation students have to master a technique of research of conditions of saliva enzymes effect on starch.

As a result of carrying out the class the student has to:

To know:

- morphofunctional characteristic of a gastrointestinal tract;
- methods of researches of digestion in oral cavity and stomach;
- mechanisms of activity and regulation of salivary glands and stomach;
- the basic concepts and terms on the class subject,
- basic physiological constants on the class subject.

To be able:

To define conditions of effect of saliva enzymes on starch.

2. CONTROL QUESTIONS FROM RELATED SUBJECTS:

1. Structure of gastrointestinal tract.
2. Digestive enzymes and mechanisms of their biological effect.
3. Histological structure of a mucous membrane of stomach, salivary glands.

3. CONTROL QUESTIONS ON THE CLASS SUBJECT:

1. Functional system of nutrition. Essence and value of digestion for activity of an organism.
2. Physiological bases of hunger and saturation. Theories of appearance of hunger and saturation. Appetite. A concept about the digestive center.
3. Digestion types.
4. Digestive and not digestive functions of gastrointestinal tract.
5. Methods of research of digestive functions. Experimental methods. A research of digestive functions at a person.
6. Digestion in an oral cavity. Meal. Chewing. Salivation. Structure and properties of saliva. Salivation regulation.
7. Swallowing, his phases and mechanism of regulation.
8. Digestion in a stomach.
 - 8.1. Enzyme function of stomach. Research methods.
 - 8.2. Gastric juice, its structure and properties. Physiological role of hydrochloric acid of gastric juice.
 - 8.3. Enzyme composition of gastric juice. Features of juice pyloric glands.
 - 8.4. Phases of gastric secretion. Neurohumoral regulation.
 - 8.5. Motor and evacuation activity of stomach, and her regulation.

Questions for independent studying:

1. Formation of hydrochloric acid and bicarbonate in cells of a mucous membrane of a stomach.

Report:

1. Structurally functional organization of system of digestion.

Virtual experiment:

1. Substrate specificity of amylase of saliva.
2. Influence of pH on the effect of pepsin.

4. PRACTICAL PART OF THE CLASS

Laboratory work 24.1. Digestion of starch with enzymes of the person's saliva

5. THE COURSE OF THE CLASS

- *Introduction:* Students ask the teacher questions which caused certain difficulties in the course of independent mastering of education material;

- *Requirements to the initial level of knowledge:* From anatomy, histology and biochemistry students should know the morpho-functional characteristic of gastrointestinal tract, during reparation of control questions at home students should give in workbooks the main definitions on a subject.

- *Correction and assessment of level of knowledge:* The student answers control questions on theoretical and application-oriented questions on the class subject "Digestion in oral cavity and stomach". In this section questions of an essence and value of digestion for activity of an organism, features of digestion in oral cavity and stomach are considered. The teacher corrects the answerers of students on the considered subject;

- students tell reports on the class subject with the subsequent discussion;

- *Setting of problems which will be solved by students:* The teacher sets the task to master a technique of research of conditions of saliva enzymes effect on starch.

- *Independent performing of tasks by students:*

-students make out the protocol of laboratory work with the subsequent discussion of its performance techniques:

- students perform practical work under monitoring of the teacher or laboratory assistant. For performance of work students are provided with methodical manuals and the necessary equipment. Visualization is provided by tables, figures.

- *Assessment of final level of knowledge of the class subject:* The teacher specifies the final level of knowledge of students of theoretical and practical questions, the basic concepts and terms, and also knowledge of basic physiological constants of the class subject;

- Viewing of the video

- *Fixing of knowledge:* Students solve situation-dependent problems on a subject of the class and answer test questions;

- *The conclusion of the teacher and the task to the next class:* At the end of the class the teacher makes the conclusion about the carried-out work and tells students the home task for the independent work. Then summing up the results of the class and signing of experience protocols is made.

Note: time of breaks of 15 minutes during an occupation.

6. QUESTIONS FOR SELF-CHECKING OF KNOWLEDGE

1. Why is dryness in a mouth felt in case of a fright or the strong disturbance?
2. Whether saliva is selected for milk? If yes what does it matter?
3. How does the secretion of gastric gland juice change in case of supply preferentially the food rich with: 1) proteins; 2) fats; 3) carbohydrates?
4. What effect does acetylcholine have on gastric secretion?

LITERATURE

Basic

1. Human physiology: textbook for overseas students = Физиология человека: учеб. пособие для иностранных студентов, обучающихся на английском языке / А. И. Киеня [и др.]; под ред. проф. Э. С. Питкевича; пер. на англ. яз. Р. А. Карпов, В. А. Мельник. — Гомель: УО ГoГМУ, 2009. — 352 с.
2. Text of lectures.

Alternate

1. Textbook of medical physiology // C. Guyton, 2006. — 1116 p.
2. Human anatomy and physiology // Alexander P., Spence-Elliott B. Masson.
3. Human physiology. The mechanisms of body function // Arthur J. Vander James H Sherman Dorothy S. Luciano, 1986. — 715 p.
4. Lecture notes on human physiology // John J Bray, Patricia A. Cragg, Anthony D.C. Macknight, Roland G. Mills and Douglass W. Taylor.
5. Human anatomy and physiology // Elaine N. Marieb, 1989. — 995 p.
6. Review of medical Physiology, International edition, 2003. — 912 p.