

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

Topic: Digestion in intestine

General time of the class 4 hours.

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

Purposes of the class

To study conditions necessary for protein digestion by gastric juice, influence of bile on fats, a technique of definition of gastric juice acidity and output of HCl by method of pH-metric titration.

Motivational characteristic of the subject

Research of conditions necessary for protein digestion by gastric juice, influence of bile on fats and acidities of gastric juice are the important diagnostic indicators allowing to estimate functioning of GIT and to define pH of gastric juice, and also to compare the received results to norm indicators. Therefore the medical student has to know conditions necessary for protein digestion by gastric juice, influence of bile on fats and to master a technique of a research of gastric juice acidity.

Tasks of the class

In the course of the class students have to master techniques of protein digestion by gastric juice, influence of bile on fats, and also technique of research gastric juice acidity.

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

To know:

- morpho- functional characteristic of small and large intestine;
- methods of research of digestion in an intestine;
- mechanisms of regulation of secretory and motor activity of an intestine;
- the basic concepts and terms on the class subject,
- basic physiological constants on the class subject.

To be able:

To determine conditions necessary for protein digestion by gastric juice, to estimate influence of bile on fats, and also to define acidity of gastric juice and output of the hydrochloric acid and to give them an assessment.

2. CONTROL QUESTIONS FROM RELATED SUBJECTS:

1. Structure of stomach, small and large departments of an intestine.
3. Histological structure of mucous membrane of an intestine.

3. CONTROL QUESTIONS ON THE CLASS SUBJECT:

1. Digestion in small intestine.
 - 1.1. External secretory activity of a pancreas. Production, structure and properties of juice of a pancreas. Regulation of pancreatic secretion.
2. The role of liver in digestion. Antitoxic functions of liver.
3. Biligenesis and biliary excretion. Bile, its participation in digestion. Structure and production of bile. Regulation of biligenesis and biliary excretion .
4. Digestion in small intestine. Intestinal secretion. Structure and properties of intestinal juice. Regulation of intestinal secretion.
5. Parietal (membrane) and cavitary digestion in small intestine.
6. Motility of small intestine and its regulation.
7. An absorption of substances in various departments of digestive tract. Absorption of hydrolysates, its mechanisms and regulation. Villi, their structure and the role in processes of an absorption.
8. Digestion in large intestine. Value of microflora of large intestine. Motility of large intestine. Defecation.
9. Features of nervous (central and local) and humoral mechanisms of regulation of digestive functions and their ratio in are various departments of digestive tract.
10. Periodic activity of digestive organs.
11. Age features of digestion.

Questions for independent studying:

1. Regulation of motor function of intestine.

Reports:

1. The deintoxication role of liver.

Virtual experiment:

1. A bile role in the activity of lipase of pancreas.

4. PRACTICAL PART OF THE CLASS

Laboratory work 25.1. Digestion of protein by gastric juice.

Laboratory work 25.2. Influence of bile on fats

Laboratory work 25.3. Examination of gastric juice acidity

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;

- *Demands to the initial level of knowledge:* From anatomy, histology and biochemistry students have to know the – morpho- functional characteristic of small and large intestine, 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 on theoretical and applied questions on the class subject "Digestion in intestine". In this section questions of features of digestion in intestine, liver roles in digestion are considered. The teacher corrects answers of students on the considered subject;

- students report papers on the class subject with the subsequent discussion;

- *Setting of problems which will be solved by students:* The teacher sets a task to study techniques of digestion of protein gastric, influence of bile on fats, and also a technique of a research of gastric juice acidity.

- *Independent performance of tasks by students:*

- students make out the protocol of laboratory works in workbooks with the subsequent discussion of a technique of performance;

- students perform practical works under control of the teacher and laboratory assistant. For performance of work students are provided with methodical guiding and the necessary equipment. Presentation is provided by tables, drawings.

- *Assessment of final level of knowledge of the class subject:* The teacher checks 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;

- *Fixing of knowledge:* Students solve situational problems of 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 does the conclusion about the carried-out work, students receive the home task for independent work. Summing up the results is carried out and protocols of experience are signed.

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

6. QUESTIONS FOR SELF-CHECKING OF KNOWLEDGE

1. The food with what physical properties and chemical composition is recommended at a decreased motility of intestine?

2. Why after crossing of the vegetative nerves innervating large intestine its motor activity will not change significantly?

3. What is the biological expediency of inhibition of intestinal juice secretion at meal?

4. How is color of urine and feces bound to formation of gallstones?

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.