ODESSA NATIONAL MEDICAL UNIVERSITY
Department of General and Clinical Pharmacology and Pharmacognosy

GUIDELINES
on independent work of students / VTS / № 2

on the topic «Carbohydrates. Glycosides.Glucose. Honey. Types of cotton; plant sources of starch, inulin, gums, pectin; sources of agar and carrageenan; raw materials of raspberries, mallow, Iceland cetraria, fucus bubble, linden species. "

Course: 3rd Faculty: medico-pharmaceutical

Approved
at the methodical meeting
departments
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Protocol № 1

Head departments _____
prof. Rozhkovsky Ya.V.

Odessa - 2024

Subject: «Carbohydrates. Glycosides.Glucose. Honey. Types of cotton; plant sources of starch, inulin, gums, pectin; sources of agar and carrageenan; raw materials of raspberries, mallow, Iceland cetraria, fucus bubble, linden species. " - 4 years

1. Relevance of the topic

The study of plant sources of starch, inulin, mucus, gum, pectin, drugs that have anti-inflammatory, enveloping, expectorant pharmacological action is relevant for future pharmacists.

Polysaccharides are high molecular weight products of polycondensation of monosaccharides linked to each other by glycosidic bonds and form linear or branched chains. They make up most of the dry matter of higher plants and algae and are the most common organic compounds on earth.

Mucaltine, plantaglucid, laminaride are successfully used in medical practice. For the practical activities of the pharmacist requires knowledge of procurement, analysis of LRS containing polysaccharides.

2. Learning objectives:

As a result of independent elaboration of this theme students should:

- know:

- basic information about macroscopic and macroscopic methods of analysis of LR and LRS, which contain carbohydrates
- effects on the human body, raw materials that contain carbohydrates
- know about the main sources of carbohydrates: glucose, honey, types of cotton; plant sources of starch, inulin, gums, pectin; sources of agar and carrageenan; raw materials of raspberries, mallow, Iceland cetraria, fucus bubble, linden species.

- be able to:

- to carry out the macroscopic analysis of LRS which contains carbohydrates
- perform microscopic analysis of LRS, which contains carbohydrates

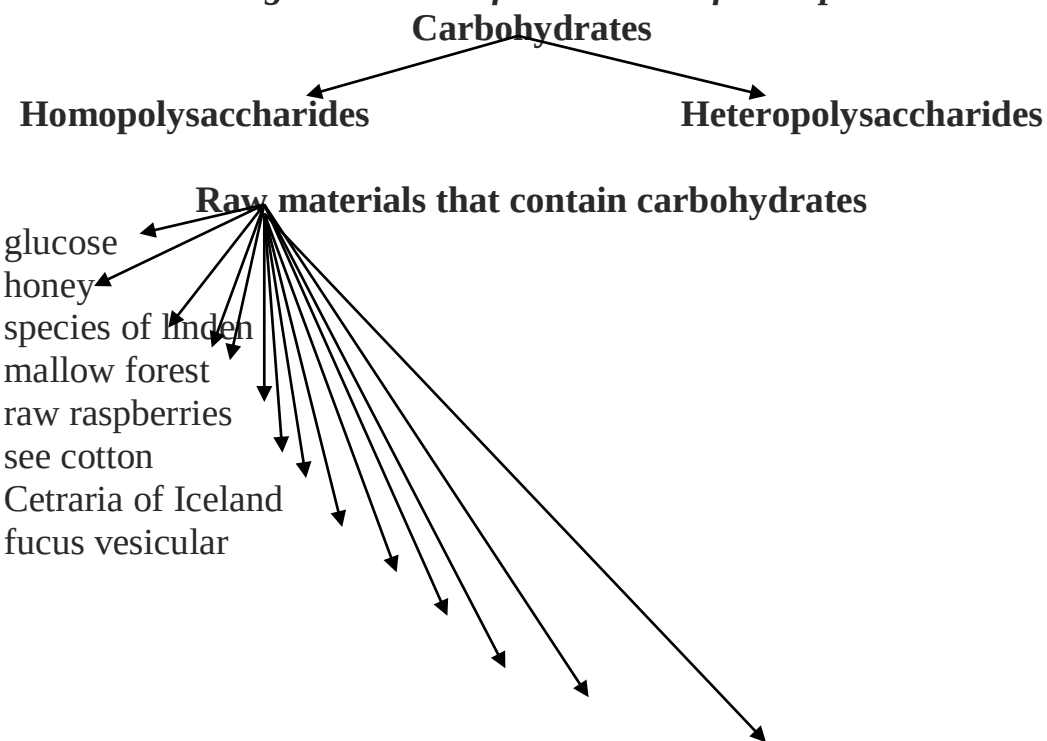
3. Materials for pre-classroom training of students.

3.1. Basic basic knowledge, skills, abilities that are necessary for independent study and mastering of the topic and which are based on interdisciplinary connections:

№ №	Discipline	Know	Be able
1	2	3	4
	1. Botany	Characteristic features of the families of the studied plants. Morphology of stem, bark, leaves, flower, fruit, root and rhizome. Anatomical structure of leaves, bark, fruit, roots, rhizomes.	Use a microscope, prepare surface preparations and cross-sections.
	2. Organic chemistry	Physical and chemical properties of polysaccharides, glycosides, terpenoids, derivatives of aromatic series, heterocycles.	Carry out qualitative reactions; purification of organic compounds.
	3. Analytical chemistry	Methods of acid - base titration (neutralization) and permanganatometry	Work with analytical balances, measuring vessels, photoelectrocalometer, use methods of chromatography on paper and in a thin layer of sorbent.

3.2. Contents of the topic.

Structural and logical scheme of the content of the topic



plant sources of inulin
plant sources of pectin
plant sources of gums
vegetable sources of starch
plant sources sources of agar and carrageenan

3.3. Recommended Books:

8. Literature

Basic literature

1. Фармакогнозія: підручник (I—III р. а.) / І.А. Бобкова, Л.В. Варлахова. – 3-є видання Всеукраїнське спеціалізоване видавництво «Медицина» 2018, 504с.

2. Фармакогнозія: базовий підручн. для студ. вищ. фармац. навч. закл.(фармац. ф-тів) IV рівня акредитації / В.С. Кисличенко, І.О. Журавель, С.М. Марчишин та ін.; за ред. В.С. Кисличенко. – Харків: НФаУ: Золоті сторінки, 2015. - 736 с.

3. Навчальний посібник з дисципліни «Фармакогнозія» / Я. В. Рожковський, Б. В. Приступа, І. А. Бойко, Н. В. Герасимюк, В. В. Черногорюк -: Методична розробка кафедри фармакогнозії ОНМедУ. – Одеса: ОНМедУ, 2019 – 51 с.

4. Державна Фармакопея України: в 3 т. / Державне підприємство «Український науковий фармакопейний центр якості лікарських засобів». – 2-е вид. – Харків: Державне підприємство «Український науковий фармакопейний центр якості лікарських засобів», 2015. – Т. 1. – 1500 с.

Additional literature:

1 Державна Фармакопея України: в 3 т. / Державне підприємство «Український науковий фармакопейний центр якості лікарських засобів». – 2-е вид. – Харків: Державне підприємство «Український науковий фармакопейний центр якості лікарських засобів», 2014. – Т. 3. – 732 с.

2. Практикум з ідентифікації лікарської рослинної сировини: навч. посіб. / [В. М. Ковальов, С. М. Марчишин, О. П. Хворост та ін.] ; за ред. В. М. Ковальова, С. М. Марчишин. – Тернопіль: ТДМУ, 2014. – 250 с.

3.4. Guidance card for self - study of a student with using the literature on the topic:

№	Basic task	Instructions	Answers
1	2	3	4
1 2 3 4 5 6 7 8 9 10 11	Describe and give characteristi c iku LR and L R S , of which receive polysacchari de and	Write down the Latin name of Althea medicinal and LRS derived from this plant ..... Give a botanical description of marshmallow .... Name the impurities to marshmallow: a, b What parts of marshmallow are used in medicine, give their pharmacognostic description, how they are harvested and dried .... Althaea in medicine is used as: a, b, c, g. Write down the Latin name of Plantain and ARS derived from this plant ..... Give a botanical description of Plantain .... What organs of plantain are used in medicine, give their pharmacognostic description, how to produce their harvesting and drying .... Name the plants impurities to plantain: a, b, c, g. Plantain is widely used in medicine as	

3.5. Materials for self-control.

3.5.1. Questions for self-control.

1. Definition of "polysaccharides", their classification.
2. Plants rich in polysaccharides.

3. Features of harvesting, drying and storage of raw materials containing polysaccharides.

4. Chemical structure of polysaccharides and their classification.

5. Physico-chemical properties of polysaccharides.

6. The main reactions to mucus.

7. Latin and Russian names of raw materials that produce plants and families of all objects of the research topic.

8. Morphological characteristics of plants, their habitats (areas of cultivation), habitats.

9. External signs of the studied types of medicinal plant raw materials.

10. Possible impurities in raw materials (marshmallow, plantain, mother-and-stepmother), and their main differences.

11. The main anatomical diagnostic features of marshmallow root and plantain leaves.

12. Reactions to woody elements of marshmallow root.

13. Chemical composition, uses and medical use of medicinal plant raw materials containing polysaccharides.

14. Phytopreparations based on polysaccharides produced by the medical industry.

3.5.2. Test tasks for self-control.

1. Powder which LRS can be used as a laxative, especially in old age

A. sugar kelp

B. nightshade particle grass

B. the root of Rauwolfia snake

G. marigold flowers

D. rowan fruit

2. Which plant powder is used in atherosclerosis and for the treatment of goiter (presence of iodine):

A. sugar kelp

B. parsnip fruit

B. dill fruit

G. gentian root

D. tansy flowers

3. Name the plant that secretes gum:

A. apricot ordinary

B. Eucalyptus ordinary

B. bird cherry

G. juniper

D. sea buckthorn buckthorn

4. Name the plant that is the raw material for the drug "Mukaltin"

A. althaea medicinal

B. marigold flowers

B. nightshade grass

G. gentian root

D. apricot ordinary

5. The roots of which plants are washed quickly to prevent slipping, cut into pieces of 10-25 cm, and then cleaned with a knife from the cork and immediately dried:

A. marshmallow root

B. valerian root

B. burdock root

G. ginseng root

D. the root of the Manchurian aralia

6. The root of which plant has a therapeutic effect due to mucus, which protects the nerve endings of the mucous membrane of the gastrointestinal tract from the irritating effects of other substances

A. marshmallow root

B. valerian root

B. burdock root

G. ginseng root

D. the root of the Manchurian aralia

7. From the root of which plants prepare an infusion of cold water (1:10)

A. marshmallow root

B. azalea root

B. burdock root

G. valerian root

D. dandelion root

8. The root of which plant is used as an anti-inflammatory and enveloping agent, mainly in diseases of the respiratory tract:

A. marshmallow root

B. the root of Rauwolfia snake

B. the root of the honeycomb

G. licorice root

D. the root of the Manchurian aralia

9. A batch of medicinal plant raw materials of plantain leaves arrived at the pharmacy warehouse. According to which indicator in accordance with the requirements of the Pharmacopoeia conduct an analysis of the content of active substances:

A. polysaccharides

B. flavonoids

B. tannins

G. anthracene derivatives

D. essential oil

10. Preparations from the root of marshmallow are used to treat diseases of the upper respiratory tract. When procuring these raw materials, the impurity may be:

A. Khatma Thuringia

B. plantain is large

B. tansy ordinary

G. chicory is common

D. dandelion medicinal

Methodical recommendations were made by  *associate professor Boyko IA*