

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

GUIDELINES

on independent work of students / VTS / № 6

**on the topic: « Terpenoids. Iridoids. Types of plantain, types of dog nettle,
valerian.»**

Course: 3rd Faculty: medico-pharmaceutical

Approved
at the methodical meeting
departments
August 30, 2024
Protocol № 1



Head departments _____
prof. Rozhkovsky Ya.V.

Topic: « Terpenoids. Iridoids. Types of plantain, types of dog nettle, valerian.»- 2 years.

1. Relevance of the topic

Isoprenoids - a large group of natural compounds, which includes a group of substances - iridoids (bitterness).

Iridoids (bitterness) include glycosides that have an intensely bitter taste. They stimulate the appetite and improve digestion. This group of natural substances is chemically little studied, so it is important to study this topic by future pharmacists.

2. Learning objectives:

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

- *know:*

- basic information about macroscopic and microscopic methods of analysis of LR and LRS, which contain iridoids.
- effects on the human body of raw materials containing iridoids
- LR and LRS, which have iridoids: plantain species, dog nettle species, valerian.

- *be able to:*

- to carry out the macroscopic analysis of LRS which contains iridoids
- to carry out microscopic analysis of LRS which has iridoids
- to know LR containing iridoids by herbarium samples
- to distinguish from impurities raw materials that contain iridoids

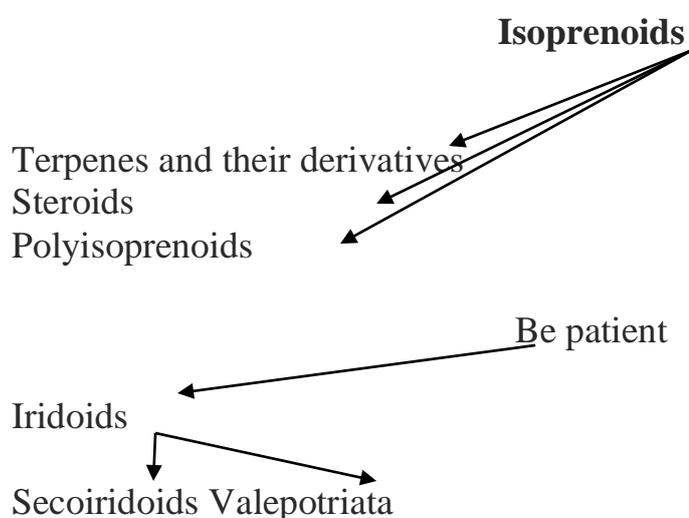
3. Materials for pre-classroom training of students.

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 permanganometry	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*



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:

№.№ р / р	Basic tasks and instructions	Answers
1	2	3
4	Define the concept of "Iridoids"	
6	Name 4 types of iridoids:	AND) B)

		IN) D)
7	List the physicochemical properties of iridoids:	
8	What is the qualitative reaction to iridoids? What color is observed?	
10	What types of biological activity do iridoids have?	
11	Name the raw materials containing: A) Pure bitterness B) Aromatic bitterness C) Bitter alkaloids	AND) B) IN)
18	Write down the Latin and Ukrainian names of yarrow and LRS derived from this plant	
19	How is yarrow used in medicine?	
20	Write down the Latin and Ukrainian names of hops and LRS obtained from this plant	
21	How are hops used in medicine?	
22	Write down the Latin and Ukrainian names of plantain lanceolate and LRS obtained from this plant	
23	How is lanceolate plantain used in medicine?	

3.5. Materials for self-control.

3.5.1. Questions for self-control.

1. Indicate the timing of harvesting and drying of raw materials: yarrow, dandelion, legume, viburnum, valerian
2. What microchemical reactions can prove the presence of spare nutrients in dandelions?
3. Why should bean leaves be collected after flowering and dried quickly?
4. Tell us about the ways and means of using raw materials: yarrow, legume, viburnum, dandelion, hops

3.5.2. Test tasks for self-control.

1. The affiliation of the compounds can be determined by the Trim-Hill reaction, while the test solution turns blue, which are the compounds:

- A iridoids
- B glycosides
- C flavonoids
- D polysaccharides
- E lipids

2. The quality of LRS in connection with insufficient study is checked organoleptically - by bitterness. The presence of bitterness indicates the presence in the LRS:

- A iridoids
- B glycosides
- C polysaccharides
- D lipids
- E alkaloids

3. Preparations made from dandelion roots are recommended to take to improve digestion and as a cholagogue, because this raw material contains:

- A iridoids
- B essential oil
- With balms
- D saponins
- E flavonoids

4. Preparations made from dandelion roots are recommended to take to improve digestion and as a cholagogue, because this raw material contains:

- A bitterness

B essential oil

With balms

D saponins

E flavonoids

5. As a means of increasing appetite, use plant raw materials that contain iridoids.

The source of these compounds is:

A Radix Gentianae

B Radix Ipecacuanhae

C Radix Rhodolae

D Radix Belladonnae

E Radix Altheae

6. Yarrow contains bitter glycosides. What is the biological effect of drugs from yarrow?

A stimulate appetite

B tonic

C diuretic

D hepatoprotective

E venotonizing

7. The pharmacy harvests plants that contain bitters to increase the secretion of gastric juice. Which plant is not allowed to harvest due to the inclusion in the Red Book

A *Gentiana lutea* L.

B *Acorus calamus* L.

C *Artemisia absinthium* L.

D *Achillea millefolium* L.

E *Tanacetum vulgare* L.

8. When the identity of the roots of yarrow was carried out, the Trim Hill reaction was performed. For which group of biologically active substances is this reaction characteristic?

A iridoids

B tannins

C flavonoids

D polysaccharides

E essential oils

9. The patient suffers from insufficient gallbladder function. The doctor recommended a course of herbal medicine. Which medicinal plant is effective in treatment:

A Folium Menyanthis trifoliatae;

B Herba Polygoni avicularis;

C Herba Polygoni hydropiperis;

D Fructus Foeniculi vulgaris;

E Herba Bursae pastoris.

10. In order to determine the composition of biologically active substances to the infusion of viburnum bark was added Trim-Hill reagent (a mixture of acetic, concentrated hydrochloric acid and 0.2% aqueous solution of copper sulfate). The solution turned blue, and then fell a purple-black precipitate, indicating the presence of raw materials

A iridoid

B anthracene derivatives

C saponins

D flavonoids

E tannins

11. The drug "Canephron" is used in chronic kidney disease. The herbal source of this drug is:

A grass of goldenrod

B milk thistle seeds

C parsnip fruit

D cherry fruit

E thyme herb

12. From the rhizomes and roots of valerian phytochemicals produce tinctures and thick extracts that are part of complex drugs with a sedative effect. Name which group of biologically active compounds are valerian triathromes: valtrate, acetovaltrate, dihydrovaltrate.

A iridoids.

B essential oils.

C alkaloids.

D polysaccharides.

E saponins.

Methodical recommendations were made by  associate professor Boyko IA