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

GUIDELINES
on independent work of students / VTS / 12

on the topic: "Lignans. Xanthoni. Podophilus thyroid, sesame Indian. Alpine licorice. "

Course: 3rd Faculty: medico-pharmaceutical

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

Head departments _____
prof. Rozhkovsky Ya.V.

Odessa - 2024

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on the topic: "Coumarins and chromones. Dill, wild carrots, spring carrots, angelica. "

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Topic: "Lignans. Xanthoni. Podophilus thyroid, sesame Indian. Alpine licorice. " - 4 years

Topic: "Coumarins and chromones. Dill, wild carrots, spring carrots, angelica. "- 4 years

1. Relevance of the topic

Phenolic compounds are very common in the plant world. According to the structure of the carbon skeleton, they are divided into a number of groups. Natural glucosides, in which aglycones are simple phenols, their di- and trimers, are called phenol glycosides, which will be discussed in the next lecture. Phenolic compounds have antimicrobial, antiviral, disinfectant, anthelmintic, antitumor, adaptogenic activity, so modern knowledge on this topic and skills of analysis of the relevant LRS will be very useful in the practice of 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 coumarins, chromones, lignans, xanthones.
- effects on the human body of raw materials containing coumarins, chromones, lignans, xanthones.
- LR and LRS, which have coumarins, chromones, lignans, xanthones: fennel, wild carrots, spring carrots, angelica; thyroid podophyllum, Indian sesame, Alpine licorice

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- be able to:

- to conduct a macroscopic analysis of LRS, which contains coumarins, chromones, lignans, xanthones.

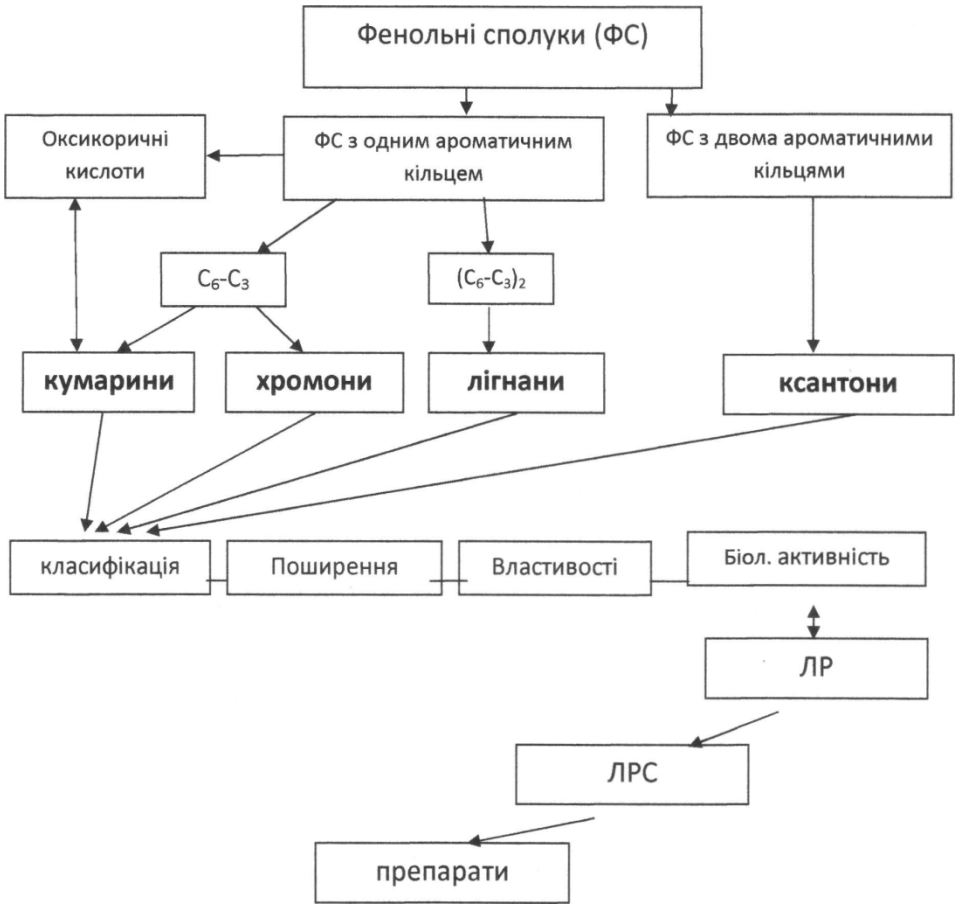
- to conduct microscopic analysis of LRS, which has coumarins, chromones, lignans, xanthones.
- to know LR containing coumarins, chromones, lignans, xanthones by herbarium samples
- distinguish from impurities raw materials that contain coumarins, chromones, lignans, xanthones.

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.



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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
1.	Write down the Latin name of fennel and LRS, which is obtained from this plant.	
2.	Give a botanical description of the name of fennel	
3.	What organs the name of fennel is used in medicine, give their pharmacognostic description, how to harvest and dry them.	
4.	Dill is used in medicine as	
5.	Write down the Latin name of wild carrots and LRS, which are obtained from this plant.	
6.	Give a botanical description of wild carrots	
7.	What organs of wild carrots are used in medicine, give their pharmacognostic description, how to harvest and dry them.	
8.	Wild carrots are used in medicine as	
9.	Write down the Latin name of the	

	following species of plants: spring carrot, angelica and LRS, which are obtained from this plant.	
10.	Give a botanical description of the following species of plants: spring carrot, angelica.	
11.	What are the organs of such plant species: spring carrot, angelica used in medicine, give their pharmacognostic description, how to harvest and dry them.	
12.	The following types of plants: spring carrot, angelica in medicine are used as	
13.	Write down the Latin name of the following plant species that contain lignans and xanthones: thyroid podophyllum, Indian sesame, alpine licorice and LRS, which are obtained from this plant.	
14.	Give a botanical description of the following plant species: thyroid podophyllum, Indian sesame, alpine licorice	
15.	What are the organs of such plant species thyroid podophyllum, Indian sesame, alpine licorice are used in medicine, give their pharmacognostic description of how to harvest and dry them.	
16.	The following types of plants: thyroid podophyllum, Indian sesame, Alpine licorice are used in medicine as ..	

3.5. Materials for self-control.

3.5.1. Questions for self-control.

1. Define BAR - coumarin. Give their classification.
2. Definition of chromones. Classification of chromones.
3. Describe the biological action of coumarins, chromones.
4. What is the specificity of the ratio of coumarins to alkali?
5. Name the main types of LPC containing chromones.
6. Name the main types of pharmacological activity of drugs -chromones.

7. Definition of lignans.
8. Give the general structural formula of true xanthones.
9. How to distinguish the crystals of lignans and xanthones by color?

3.5.2. Test tasks for self-control.

1. Some types of raw materials during procurement can cause burns, which causes the presence of them:

A furocoumarins
B lignans
C flavonoids
D polysaccharides
E iridoids

2. Coumarins are found in plants of different families. Isolate coumarins from vegetable raw materials by extraction:

A organic solvents
B hydrochloric acid solution
C isotonic sodium chloride solution
D purified water
E concentrated sulfuric acid

3. Chestnut seeds are a source of venotonizing drugs. To identify coumarins in chestnut seeds used:

A reaction with diazonium salts
B Dragendorf reaction
C sublimation reaction
D reaction with tannin
E Keller-Killian reaction

4. Obtained by the pharmaceutical composition of LRS is an oval seed, 3-5 cm in diameter, covered with a shiny, brown skin with a large grayish spot at the base. The taste is bitter-astringent, slightly oily, odorless. Identify LRS:

A chestnut seeds
B chilibukha seeds
C milk thistle seeds
D lemongrass seeds
E flax seeds

5. Herbal medicines Escuzan and Venogad have a venotonizing effect, reduce the permeability of capillaries and improve microcirculation in blood vessels. The raw material for the production of these drugs is

A bitter chestnut ordinary

B clover medicinal

C horsetail

D common buckwheat

E linden heart-shaped

6. Preparations of leaves and seeds of horse chestnut are prescribed for venous insufficiency. The quality of horse chestnut seeds is characterized by the content:

A escin

B esculetin

C of glycyrrhizin

D erychroside

Erysimozide

7. Oxy - and methoxycoumarins show venotonizing activity. Preparations from which vegetable raw materials the pharmacist can recommend in the following case:

A Fructus Aesculi hippocastani

B Fructus Rhamni catharticae

C Fructus Rosae

D Fructus Myrtilli

E Fructus Sorbi aucuparicae

8. The fruits of parsnip sowing, as well as similar LRS family of celery (umbrella), harvested in the appropriate phenophase:

A after browning 60-80% of umbrellas

B at the beginning of fruiting

C during ripe fruiting

D extinction of the aboveground part

E phase of partial fruit ripening

9. When harvesting, some types of LRS can cause burns, they include:

A Pastinaca sativa

B Adonis vernalis

C Convallaria majalis

D Panax ginseng

E Polygonum bistorta

10. Parsnip fruits are used to obtain antihypertensive and photosensitizing agents. The quality of raw materials is regulated by the content:

A furocoumarin

B polysaccharides

C lignans

D alkaloids

E vitamins

11. The drug "Beroxan", which is a mixture of bergapten and xanthotoxin, is used as a photosensitizer. What raw materials are the source of its production:

A Fructus Pastinacae sativae

B Fructus Ribes nigri

C Fructus Aroniae melanocarpae

D Fructus Rosae caninae

E Fructus Alni

12. The drug amifurin contains furocoumarins. To obtain the substance of these BAS use:

A fruits ami large

B fruits of psoralea

C parsnip seeds

D fruits of spring carrot

E rhizomes with angelica roots

13. Fig leaves are used for the production of photosensitizers, so the procurement of these raw materials should be:

A morning, in cloudy weather

In the afternoon

C in the evening

D at night

E in the morning

14. The drug "Avisan" has an antispasmodic, relaxing effect on the muscles of the ureters. Which plant is used to obtain this drug:

A hanging carrot-like

B wild carrots

C fragrant dill

D clover medicinal

E Ami is great

15. From the fruits of milk thistle produce a number of domestic and foreign drugs of hepatoprotective activity. The good quality of this raw material is determined by the content:

A flavolignans

B coumarins

C alkaloids

D vitamins

E terpenoids

16. Herbal drug Silibor is used as a hepatoprotective agent. The source for obtaining this drug is:

A milk thistle seeds

B cornflower flowers

C tansy flower ordinary

D hawthorn flowers

E horsetail grass

17. Medicinal plants are part of many drugs for the treatment of the hepatobiliary system. Indicate what is the source of the hepatoprotective drug "Hepabene":

A milk thistle extract

B chamomile extract

C calendula extract

D licorice extract

E capsicum extract

18. The patient asked the pharmacist to recommend a hepatoprotective agent of plant origin. Name medicinal plant raw materials that contain silibin and have a hepatoprotective effect.

A milk thistle fruits.

B flax seeds.

C lemongrass seeds.

D fennel fruit.

E pumpkin seeds.

19. Rhizome and roots of Eleutherococcus are used as an adaptogenic agent. What are the current ones substance contains this raw material?

A lignans

B cardiosteroids

C polysaccharides

D sesquiterpenes

E flavonoids

20. In the absence of tonic drugs from ginseng roots in the pharmacy they can be replaced by drugs from:

A Eleutherococcus senticosus

B Orthosiphon stamineus

C Glycyrrhiza glabra

D Polygala senega

E Astragalus dasyanthus

21. Preparations of ginseng roots have tonic, adaptogenic properties, improve mental and physical performance. In the absence of ginseng tincture in the pharmacy, it can be replaced by drugs similar in action from raw materials:

A radices Eleutherococci

B radices Valerianae

C radices Inulae

D radices Ononidis

E radices Rhei

22. The drug Condyline NSA contains lignins. To obtain the

substance of these BAS use:

A rhizomes with podophyllum roots

B rhizomes with angelica roots

C rhizomes with valerian roots

D St. John's wort spotted

E horsetail grass

23. St. John's wort is processed into a number of drugs. In addition to this species, the official species are also:

A Hypericum maculatum

B Hypericum hirsutum

C Hypericum elegans

D Hypericum montanum

E Hypericum linariodes

24. The drug "Alpizarin" is used in the form of ointments and tablets for the treatment of herpes and other viral diseases. It is obtained on the basis of xanthone from the alpine penny

A magniferin

B anchovine

C tovofelina

D tovoltezin

E visnadina

25. Xanthones with substitution in positions 1,3,5,8 have antiviral properties (mangiferin and its derivatives). Specify a drug with this BAR group:

A Alpizarin

B Legalon

C Alor

D Marelin

E Flacumin

Methodical recommendations were made by _____ *associate professor Boyko IA*