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

GUIDELINES
on independent work of students / VTS / № 8

on the topic: «Diterpenoids. Resins and balms. Scots pine, stevia Rebo, frankincense (boswellia), styrofoam benzoin, toluene balm, Peruvian balm, commiphora myrrh. "

Course: 3rd Faculty: medico-pharmaceutical

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

Head departments _____
prof. Rozhkovsky Ya.V.

Odessa - 2024

Topic: «Diterpenoids. Resins and balms. Scots pine, stevia Rebo, frankincense (boswellia), styrofoam benzoin, toluene balm, Peruvian balm, commiphora myrrh. " - 2 years

1. Relevance of the topic

Consideration of diterpenes, resins, balms and raw materials containing them, logically continues the study of isoprenoids. Although diterpenes, which are part of resins and balms, are widely used mainly in the East and South, turpentine from more common conifers is important for world medicine and modern pharmacy as a source for turpentine, rosin, camphor synthesis - products used. for the manufacture of some dosage forms, and also have their own medicinal properties. Of the modern sources of diterpenoids, HFC 1.3 includes stevia, which is now in high demand.

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 diterpenoids.
- effects on the human body of raw materials containing diterpenoids
- LR and LRS, which have diterpenoids: Scots pine, stevia Rebo, frankincense (boswellia), benzoic styrax, toluene balm, Peruvian balm, commiphora myrrh.

- be able to:

- to carry out the macroscopic analysis of LRS which contains diterpenoids
- perform microscopic analysis of LRS, which has diterpenoids
- to know LR containing diterpenoids according to herbarium samples
- distinguish from impurities raw materials containing diterpenoids

3. Materials for pre-classroom training of students.

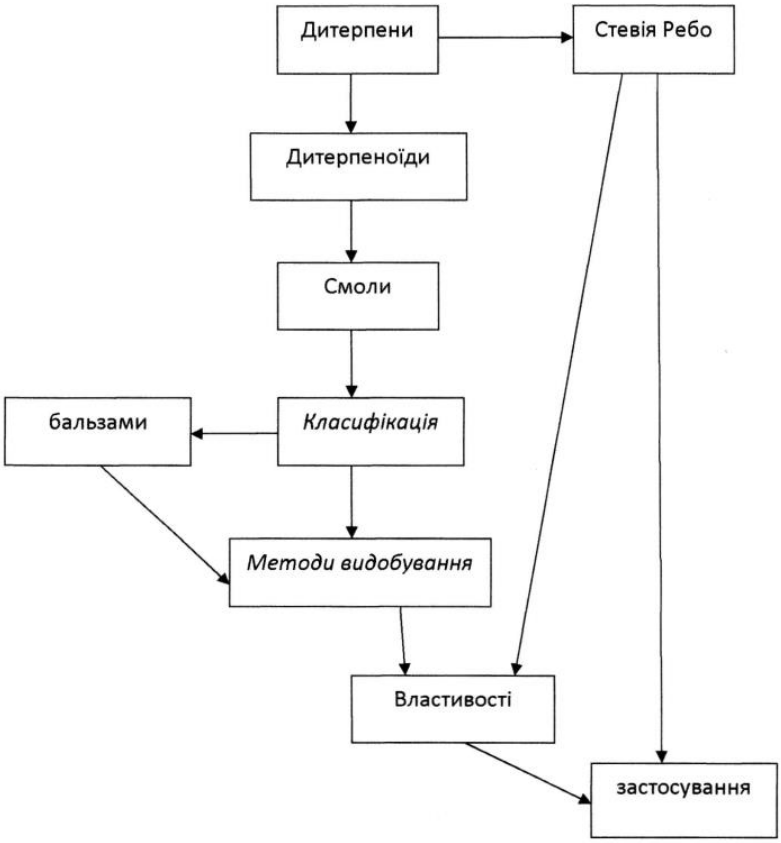
3.1. Basic basic knowledge, skills, abilities that are necessary for independent study and mastering of the topic and which are based on interdisciplinary connections:

№ №	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. Carry out qualitative reactions; purification
	2. Organic	Physical and chemical	of organic

	chemistry	properties of polysaccharides, glycosides, terpenoids, derivatives of aromatic series, heterocycles.	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



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 with

№№ p / p	Basic tasks and instructions	Answers
1.	2	3
2.	Write down the Latin name of Scots pine and LRS, which is obtained from this plant.	
3.	Give a botanical description of Scots pine.	
4.	What organs of Scots pine are used in medicine, give their pharmacognostic description, how to harvest and dry them.	AND) B) IN) D)
5.	Pine is used in medicine as…	
6.	Write down the Latin name of the stevia plant Rebo and LRS, which is obtained	

	from this plant.	
7.	Give a botanical description of stevia Rebo.	
8.	What organs of stevia Rebo are used in medicine, give their pharmacognostic description, how they are harvested and dried.	AND) B) IN)
9.	Stevia Rebo is used in medicine as	
10.	Write down the Latin name of the incense tree (boswellia) and LRS, which is obtained from this plant.	
11.	Give a botanical description of the species of incense (boswellia).	
12.	What organs of an incense tree (boswellia) are used in medicine, give their pharmacognostic description, how they are harvested and dried. And how is frankincense used in medicine?	
13.	Write how benzoic styrax is used in medicine, from which plants it is obtained ?.	
14.	Write how toluene balm is used in medicine, from which plants it is obtained?	
15.	Write how Peruvian balm is used in medicine, from which plants it is obtained?	
16.	Write how myrrh is used in medicine and from which plants are obtained?	

3.5. Materials for self-control.

3.5.1. Questions for self-control.

1. Name the types of diterpenes that are most common.
2. What is resin?
3. Give the classification of resins.
4. Name the most common method of resin extraction.
5. What is the source of asafetida gum-resin?
6. What pharmacological activity do resins show?
7. Name the ways of using resins.

3.5.2. Test tasks for self-control.

1. If turpentine is a volatile substance (essential oil) in pine resin, then how is it usually extracted?

AND. Distillation with water vapor
B. Extraction with hot water
B. Alcohol extraction
D. Evaporation
D. Pressing

2. Toxic diterpenes include
A. Diterpene alkaloids
B. Resin acids
B. Stevioside
D. Diterpene alcohols
D. Aromatic resins

3.Resins dissolved in essential oil are called
A. Oil-resin
B. Comedy-resin
B. Actually resin
G. Gumi
D. Rosin

4.The resin contained in this LRS, participates in the overall pharmacological action of the drug as a diuretic. This LRS
A. Birch buds
B. Buckthorn bark
B. Leaves of legumes
D. Rose hips
D. Flax seeds

5.Glassy pieces of yellow color, crispy, shiny, used in technology and in the manufacture of patches - are:
A. Rosin
B. Turpentine
B. Wax
G. Lanolin
D. Paraffin

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