

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

**GUIDELINES**  
**on independent work of students / VTS / № 19**

**on the topic: «LR and raw materials that contain various biologically active substances. Sources of allantoin (cucumber, lovage, beans), pumpkin, prickly iron, wormwood, pyrethrum, lovage. Culture of isolated tissues.»**

**Course: 3rd Faculty: medico-pharmaceutical**

**Approved on methodical  
meeting of the department  
"30" 08.2024  
Protocol № 1  
Head department  
MD, prof. JV Rozhkovsky**



**Topic: «LR and raw materials that contain various biologically active substances. Sources of allantoin (cucumber, lovage, beans), pumpkin, prickly iron, wormwood, pyrethrum, lovage. Culture of isolated tissues.»- 4 years.**

### **1. Relevance of the topic**

In modern medical practice, as well as in the pharmaceutical industry, in addition to pharmacopoeial (official) types of drugs and the corresponding drugs, which are standardized for established and studied active substances, the use of some other types with proven therapeutic effect, but with insufficiently studied chemical composition. These LR and LRS are considered in this topic. The list of such species cannot be permanent, because it corresponds only to the current state of phytochemical and pharmacological research, which changes the rank of some medicinal plants, which acquire the status of official.

### **2. Learning objectives:**

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

**- *know:***

- basic information about LR and LRS, which contain various biologically active substances.

- the impact on the human body of raw materials that contain various biologically active substances.

- LR and LRS, which have different biologically active substances: sources of allantoin (cucumber, lovage, beans), pumpkin, prickly iron, wormwood, pyrethrum, lovage.

- information on the culture of isolated tissues.

**- *be able to:***

- to conduct a macroscopic analysis of LRS, which contains various biologically active substances.

- to conduct microscopic analysis of LRS, which has various biologically active substances.

- to know LR, which contains various biologically active substances according to herbarium samples

- distinguish from impurities raw materials that contain various biologically active substances.

### **3. Materials for pre-classroom training of students.**

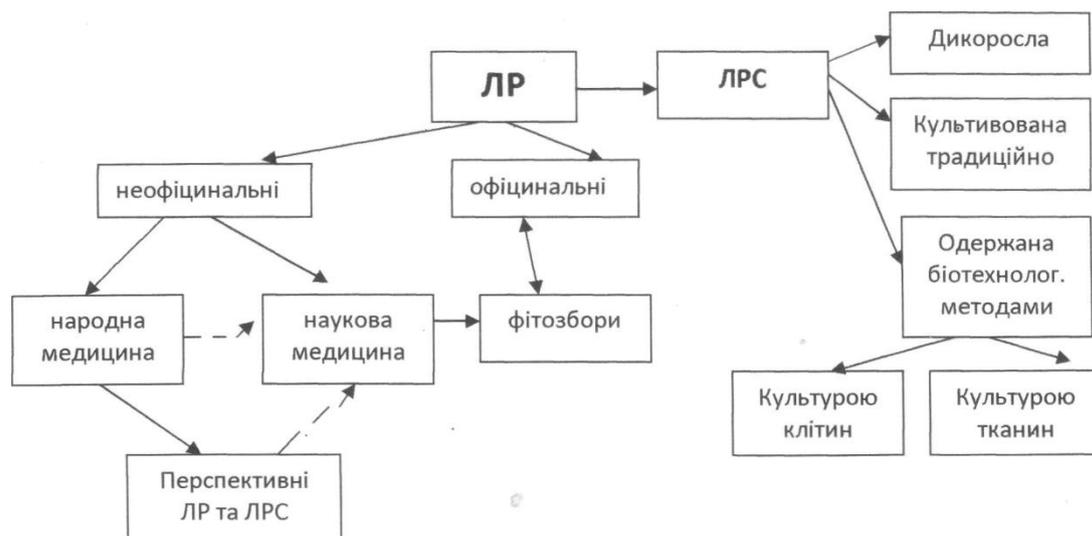
**3.1. Basic basic knowledge, skills, abilities that are necessary for independent study and mastering of the topic and which are based on interdisciplinary connections:**

<b>№</b>	<b>Discipline</b>	<b>Know</b>	<b>Be able</b>
<b>№</b>			

1	2	3	4
	<p>1. Botany</p> <p>2. Organic chemistry</p> <p>3. Analytical chemistry</p>	<p>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.</p> <p>Physical and chemical properties of polysaccharides, glycosides, terpenoids, derivatives of aromatic series, heterocycles.</p> <p>Methods of acid - base titration (neutralization) and permanganatometry</p>	<p>Use a microscope, prepare surface preparations and cross-sections.</p> <p>Carry out qualitative reactions; purification of organic compounds.</p> <p>Work with analytical balances, measuring vessels, photoelectrocalometer, use methods of chromatography on paper and in a thin layer of sorbent.</p>

### 3.2. Contents of the topic.

- structural and logical scheme



### 3.3. Recommended Books:

#### - additional

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.

#### Додаткова література:

- 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. Сербін А.Г., Сіра Л.М., Слободянюк Т.О. Фармацевтична ботаніка. Підручник. – Вінниця: НОВА КНИГА, 2007. – 488 с.
3. 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.

Medicinal raw materials of plant and animal origin. Pharmacognosy: a textbook / ed. GP Yakovlev. - СПб.: СпецЛит, 2006. - С. 692-721

### 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 the sources of allantoin (cucumber, lovage, beans) and LRS, which are obtained from these plants.	
2.	Give a botanical description of sources of allantoin (cucumber, lovage, beans)	
3.	What organs of allantoin sources (cucumber, lovage, beans) are used	

	in medicine, give their pharmacognostic description, how to harvest and dry them.	
4.	Sources of allantoin (cucumber, lovage, beans) in medicine are used as ....	
5.	Write down the Latin name of the following plants: pumpkin species, prickly iron, wormwood, pyrethrum, lovage. and LRS, which is obtained from this plant.	
6.	Give a botanical description of the following plants: pumpkin species, prickly iron, wormwood, pyrethrum, lovage.	
7.	What are the organs of such plants: species of pumpkin, prickly iron, wormwood, pyrethrum, lovage. used in medicine, give their pharmacognostic description of how they are harvested and dried.	
8.	Such plants: species of pumpkin, prickly iron, wormwood, pyrethrum, lovage. in medicine used as ....	
9.	Provide information on the culture of isolated tissues	

### 3.5. Materials for self-control.

#### 3.5.1. Questions for self-control.

1. Name the main sources of replenishment of the modern range of medicinal plants.
2. In which cases of LRS, which have pronounced medicinal properties, require additional study of the chemical composition?

3. What is the difference between the pharmacopoeial range of natural sources of medicinal raw materials from the list of sources that only have a permit for use?

4. What unofficial species of higher and lower plants are included in Zdrenko's collection?

### 3.5.2. Test tasks for self-control.

A. Q. In which case, when analyzing the good quality and identity of LRS, only the content of extractives is determined in the analytical sample?

A. The active substance in this raw material has not yet been established or is known

B. LRS is a strong

C. LRS is poisonous

D. LRS is used only fresh

B. Name the dosage form of *Cornus Kalanchoes recens*:

A. Juice

B. Aloe

C. Liquid extract

D. Thick extract

C. How was *Kalanchoe peristis* introduced into scientific medicine?

A. From folk medicine

B. B. From Tibetan medicine

C. According to the results of chemical studies

D. D. Accidentally

D. The raw material of the fungus *Fungus betulinus* is

A. Vegetative body

B. Disputes

C. Mycelium

D. Milk juice.

E. The source of medicinal raw materials called "lycopodia" are spores

A. Plauna mace-shaped

B. Plauna-lamb

C. Plaun annual

D. Male fern

5. The medicinal plant, which is a semi-parasite and inhabits trees (poplars, pears) and is currently used only in homeopathy, is called:

A. White mistletoe

B. Tinder

C. Birch mushroom

D. They infected

6. Name the species of comfrey, the raw material of which is part of the Zdrenko collection:

- A. Ж.шорсткий
- B. J. medicinal
- C. J. eastern
- G. J. ordinary

7. Waxy-resinous substance, which has a heterogeneous composition, close to the composition of poplar, birch or willow buds, and is produced by worker bees is called:

- A. Propolis
- B. Uterine milk
- C. Beeswax
- D. Honey

8. Tissue and cell culture should be used to obtain metabolites of LRS that

- A. They have a limited raw material base
- B. Affect metabolism
- C. Inhibit tumor growth
- D. They belong to the poisonous and potent

9. Identify the features of economic feasibility of the method of tissue culture for LRS: environmental friendliness; conservation of natural resources (including land); reduction of time for obtaining a large amount of raw materials; programmed chemical composition; the need for complex equipment and reagents; cell aging and failure of biosynthesis; small output BAR

*Methodical recommendations were made by*



*associate professor Boyko IA*