ВУЗ, III курс 6 семестр

Class 5.
Analysis of medicinal plant material containing alkaloids (IV).

Aims: 1. To be able to recognise medicinal plants containing quinolizidine and indole derivatives alkaloids by their external features and to distinguish them from impurities.

2. To learn how to determine the authenticity of raw materials of this group by morphological and anatomical features.

3. To be able to establish its quality.

Questions:

1. Characterisation of indole and quinolizidine alkaloids.
2. Medicinal plants and raw materials containing quinolizidine alkaloids:
- *Nuphar luteum*
3. Medicinal plants and raw materials containing indole alkaloids:
- *Vinca minor*
- *Catharanthus roseus*

Laboratory work:

CAUTION MUST BE EXERCISED WHEN WORKING WITH ALKALOID-BEARING RAW MATERIALS!!!

Medicinal plants and raw materials containing quinolizidine alkaloids

Work 1. Morphological and anatomical analysis of medicinal plant material of Nuphar luteum.

Yellow pond lily rhizomes – Nupharis lutei rhizomata
Producing plant: yellow pond lily (spatterdock, European cow lily) – *Nuphar luteum* L.
Family: *Nymphaeaceae*

Study the producing plant from herbarium specimens and tables, selecting the diagnostic attributes for its recognition.

Describe the raw material according to the scheme, paying attention to the diagnostic features: the nature of the cutting and shape of the pieces, the colour and shape of the scars - traces of leaf petioles and roots, the consistency, the types of structure.

Make thin cross-sections from the pre-soaked rhizome, reactions to the woody elements and examine under low and high magnification with a microscope.

Examine the chemical composition of the raw material. Write down the formula of the main alkaloid. Specify the content of the alkaloids according to the normative documentation.

Write down the pharmacological effect and use of the raw material.

Medicinal plants and raw materials containing alkaloids of the indole group

Work 2: Study of plants in the *Apocynaceae* family containing alkaloids of the indole group.

common periwinkle herb –Vincae minoris herba
Producing plant: common periwinkle – *Vinca minor*

rosy periwinkle leaves – Catharanthi rosei folia
Producing plant: rosy periwinkle – *Catharanthus roseus* (L.) G. Don f.
Family: *Apocynaceae*

Study the rosy periwinkle and the common periwinkle in comparison from the herbarium specimens and tables. Identify the distinguishing characteristics that make it possible to recognise the medicinal plants. Fill in the table.

Features of the comparison	common periwinkle	rosy periwinkle
1. Life form		
2. Stems		
3. Leaves		
4. Flowers		
5. Geographical distribution		

Describe the raw materials of the common periwinkle and the rosy periwinkle according to the relevant schemes.

Study the chemical composition of the raw material of the common periwinkle and rosy periwinkle. Write down the formulas of the main active substances causing pharmacological properties of the studied raw material.

Write down pharmacological action of the raw material and its use. List the medicinal preparations.

Self-assessment questions:

1. List the medicinal plants of the *Apocynaceae* family. What class of alkaloids do they contain?
2. What are the micro-diagnostic features that can be used to identify the raw materials of the *Nuphar luteum*?
3. What is the characteristic of species particularity of common periwinkle?
4. What is the specificity of chemical structure of *Catharanthus roseus* alkaloids with antimitotic activity?
5. Justify the rational dates of collection of raw materials of mound of *Nuphar luteum*.
6. Name the impurity to the raw material of *Nuphar luteum*.