Class 3

Analysis of medicinal plant materials containing flavonoids (III).

PURPOSE OF THE LESSON:

1. To learn to recognise medicinal plants containing flavonoids by external features and distinguish them from impurities.
2. To learn to determine the authenticity and quality of raw materials containing flavonoids.

QUESTIONS:

1.Morphological and anatomical characteristics of the Buckwheat family.

2.Medicinal plants and raw materials containing flavonoids:

- Highlander species;
- Bidens tripartita;
- species of St John's wort.

3. Formulas: rutin, hyperoside, hypericin, quercetin, avicularin, kaempferol, sulphuretin.

Work 1. Comparative morphological and anatomical analysis of species of the genus Highlander.

1. Write down the Latin and Russian names of the producing plants and families.
2. Study the mountain species in comparison, note the diagnostic features.

Table 1

Distinctive macroscopic featuers of Polygonum

Type	Stem	Rastrub	Inflorescence	Leaves
Polygonum hydropiper				
Polygonum persicaria				
Polygonum aviculare				

3. Prepare microslides in chloral hydrate solution, having previously boiled the leaves of the studied raw materials in 5% NaOH solution.

Arrange it in the form of a table.

Table 2

Distinctive microscopic featuers of Polygonum

Type	Epidermis	Hairs	Inclusions	containers	glands
Polygonum hydropiper					
Polygonum persicaria					
Polygonum aviculare					

4. Specify the chemical composition of each of the species of bitterroot studied.

Table 3

Chemical composition of Polygonum

Polygonum hydropiper	Polygonum persicaria	Polygonum aviculare

5. To specify pharmacological action, medicines and uses of species of Polygonum, to draw up in the form of a table:

Type	pharmacological action	Uses	Medicines
Polygonum hydropiper			
Polygonum persicaria			
Polygonum aviculare			

Work 2. Morphological and anatomical analysis of the raw material " St John's Wort herb".

1. Study the plants from herbarium specimens and tables, highlighting diagnostic features for their recognition in nature.

2 Describe the raw materials, paying attention to the diagnostic features: the presence of two weakly projecting edges on the stem, translucent dots (receptacles) on the leaves, the type of inflorescence, the character of sepals, the colour of flowers.

3. Prepare a microslide of St John's wort leaf from the surface, examine at low and high microscope magnification, find diagnostic features, sketch

4. Study the chemical composition of the raw materials. Write down the formulae of the main active ingredients.

5. Specify the pharmacological action, preparations and use of St. John's wort herb.

Work 3: Morphological and anatomical analysis of the raw material of "Bidentis tripartitae herba".

1. Study the plants from herbarium specimens and tables, highlighting diagnostic features for their recognition in nature.

2 Examine and describe the external characteristics of raw materials.

3 Study the chemical composition of the raw materials. Write down the formulae of the main active substances.

4. Specify the use of the herb of Bidens tripartita.

SELF-MONITORING EXERCISES:

1. What external features can be used to distinguish ophicinal Polygonum species from each other and to distinguish them from other Polygonum species - admixtures?

2. On what biologically active substances are standardised raw materials of St. John's wort?

3. What micro-diagnostic signs are characteristic of Bidens tripartita?

4. Name the most typical defects of raw materials of Bidens triprtita, St John's wort.