Topic of the lession

"Organisational meeting. Safety briefing. Rules for accepting medicinal herbs".

Aims: To introduce the students to the timetable for the pharmacognosy practice. To give a safety briefing. To introduce the students to the rules of the practice diary.

Work 1. Safety briefing

Safety instructions for work in the laboratory

1. Wear white coats and caps (headscarves) to class. The hair must be cleaned carefully.

2. When working in the laboratory, special care must be taken and extreme caution must be exercised. Lack of familiarity with the instruments and the properties of substances, negligence and deviation from the above rules may lead to serious consequences (cuts, burns, blindness, etc.).

Experiments must always be carried out with the quantities (or concentrations) of substances and in the sequence and conditions described in the instructions.

4. All experiments with poisonous and unpleasant smelling substances are to be carried out in fume hoods.

5. The substance should be sniffed without bending over the vessel and without inhaling fully with your chest, but only by directing the vapour or gas towards yourself by hand movement.

6. When diluting strong acids, especially sulphuric acid, you should pour the acid into water, not vice versa, and use thick-walled or porcelain ware.

7. When heating the test tube, do not hold it with the opening towards yourself or others nearby.

8. If your face or hands get splashed with the liquid, wash it off immediately with water and wipe it off with a towel. Splashes of strong acid should be washed out with plenty of water, then rinse with a weak solution of

baking soda. Alkali should be washed out with water until the skin splashed is no longer slippery.

9. When working with alcohol burners, do not allow the tank to overheat, do not light the burner by tilting it towards the second burner; do not refill the fuel in the alcohol burner without extinguishing it.

10. When heating liquid in test tubes, fill them no more than 1/3 of the test tube volume. Heat the test tube evenly to avoid ejection.

11. Use clamps when heating liquids or solids in test tubes. Do not direct the opening of the test tube towards yourself or your neighbours, as the ejection may cause burns! After heating is finished, extinguish the burner with the cap! Do not blow it out!

12. Be careful when working with razor blades! Use them only for making cuts!

13. Wash your hands thoroughly after handling poisonous plants and raw materials!

14. If you get parts of poisonous plants or raw materials in your eyes, rinse them thoroughly with water.

15. Do not determine the taste of poisonous plants or raw materials!

16. It is strictly forbidden to eat while in the laboratory!

17. When the work is finished, clean up the workplace and hand it over to the person on duty.

Safety and Health Instructions for Field Trips in Pharmacognosy:

1. Students should wear appropriate clothing and footwear on excursions. Shoes must be closed, comfortable, without heels, comfortable clothing with long sleeves if possible (shoulders must be covered from the sun), head coverings must be provided.

2. Strictly adhere to the rules of the road, especially when crossing motorways, country roads, railways, when driving along country roads and asphalt roads.

3. be especially careful when working near power lines and avoid being under them if possible.

4. Do not take shelter from thunderstorms under trees. Always keep metal objects (shovels, spades, knives etc.) away from yourself. Do not use your mobile phone or internet connection during a thunderstorm.

5. It is strictly forbidden to smoke in the fields sown with cultivated plants, steppe and forest natural communities.

6. It is forbidden to drink swamp or river water. Drinking water must be taken from home.

7. Particular caution should be exercised when collecting poisonous plants as well as plants that may cause local irritation and have photosensitizing effects. You should not taste their fruits or bite their shoots and leaves or allow the juice of these plants to get on your skin. Remember that freshly harvested plants are more dangerous than dried ones. Lying on grass can cause skin irritation.

8. Do not take perishable foodstuffs as dry rations, do not eat food with unwashed hands, especially after collecting poisonous plants, and do not eat unwashed berries and fruits.

9. It is strictly forbidden to swim in open water, especially in places not suitable for it.

10. It is forbidden to climb trees, and also to go down steep slopes of ravines and steep riverbanks.

11. animals, including domestic animals, should not be touched (they can be vectors of infection). Do not tease animals, especially large animals (dogs, cows, horses, camels).

12. It is advisable to carry insect and tick repellents, especially when visiting areas where they are found.

13. If you are bitten by a tick, spider, insect or snake, report it to your instructor immediately for first aid.

14. After the excursion, the body must be examined to remove ticks.

Work 2. Rules for a pharmacognosy practice diary

The internship diary is a 96-sheet A4 notebook or file folder. The diary must have a title page in the prescribed form (see Appendix 1). After the title page, the internship timetable should be arranged in the form of a table (see Appendix 2).

The students record each day of the internship in the diaries.

For this purpose the student has to fill in the protocol of the analysis of medicinal herbal raw material with compulsory completion of all the items.

The analysis of medicinal plant raw materials includes the determination of authenticity and goodness.

The analysis protocol for determining the authenticity includes the following items:

1. Name of raw materials in English and Latin.

2. Name of the producing plant and family in English and Latin.

3. Results of the macroscopic analysis

4. The results of microscopic analysis.

5. Results of qualitative reactions or determinations of major groups of bioactive substances.

A protocol for the determination of benignity shall include the following items

1. Results of purity determination of medicinal plant material.

2. Results of determination of the degree of crushing of medicinal plant material.

3. Results of determination of moisture, total ash and ash insoluble in 10% hydrochloric acid, extractive substances.

As a result of the practice, each student should draw up protocols for determining the authenticity and goodness (by some numerical indicators) of medicinal plant raw materials, the drawn up protocols of analysis of herbal plants are pasted into the diary or inserted into the files of the folder.

After the protocols of analysis of medicinal herbs, the students have to describe the medicinal plants (see Annex 3 for the list of raw materials) and their impurities. The students characterise the medicinal plants and their impurities according to the scheme:

1. Name of raw material in English and Latin.

2. The name of the producing plant and family in English and Latin.

3. The botanical characteristic of the plant.

4. Geographical distribution of the producing plant, areas of harvesting and cultivation.

5. Methods, timing of harvesting and drying of raw materials.

6. Possible impurities.

7. Description of external features of the raw material.

8. Diagnostic signs in the microscopic examination of raw materials.

9. Chemical composition.

10. Storage of raw materials.

11. Pharmacological action. Application in medicine. Preparations.

The diary contains descriptions of 50 medicinal plants and their impurities.

Federal State Budgetary Educational Institution of Higher Education
institution of higher education
«Volgograd State Medical University Ministry of Health of the Russian Federation»
Department of Pharmacognosy and Botany

Faculty: Pharmacy
Speciality: 33.05.01 Pharmacy

PRACTICE DIARY

"Pharmacognosy practical training".
3rd year student

_____

(Full name)

group_____

Time of internship:

from «__»_____ 20____ . to «__»_____20___ .

The internship supervisor from the organisation (university):

_____/_____/

Shedule of Pharmacognosy practice

Date	Place of practice the type of work carried out	Teacher's signature

List of medicinal plants

1. Aronia melanocarpa;
2. Berberis vulgaris;
3. Hyoscyamus niger;
4. Helichrysum arenarium;
5. Crataegus (species);
6. Valeriana officinalis;
7. Persicaria hydropiper;
8. Polygonum persicaria;
9. Polygonum aviculare;
10. Inula helenium;
11. Melilotus officinalis;
12. Quercus robur;
13. Datura stramonium;
14. Origanum vulgare;
15. Rhamnus cathartica;
16. Hypericum perforatum;
17. Viburnum opulus;
18. Urtica dioica;
19. Sanguisorba officinalis;
20. Frangula alnus;
21. Convallaria majalis;
22. Tilia (species);
23. Rubia tinctorum;
24. Tussilago farfara;
25. Juniperus communis;
26. Mentha piperita;
27. Calendula officinalis;
28. Taraxacum officinale;
29. Alnus (species);
30. Capsella bursa- pastoris;
31. Tanacetum vulgare;
32. Plantago major;
33. Artemisia absinthium;
34. Leonurus quinquelobatus;
35. Chamomilla recutita;
36. Sorbus aucuparia;
37. Cotinus coggygria;
38. Rhus coriaria;
39. Glycyrrhiza glabra;
40. Achillea millefolium;
41. Anethum graveolens;
42. Viola arvensis;
43. Foeniculum vulgare;
44. Equisetum arvense;
45. Humulus lupulus;
46. Thymus serpyllum;
47. Bidens tripartita;
48. Chelidonium majus;
49. Rosa(species);
50. Rumex confertus.

Protocol for determining the authenticity of a medicinal herbal tea collection

Date _____

Name of a medicinal herbal tea collection
Eng./Lat._____
Composition of a medicinal herbal tea collection
_____
_____
_____

Macroscopic features:

_____
_____
_____
_____
_____

Microscopic features:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Conclusion:_____
_____

Rules for the acceptance of medicinal plant material. Sampling

Aims: To equip the students with the skills of accepting medicinal plant raw materials and to strengthen the practical skills of taking analytical samples of medicinal plant raw materials (herbal medicine).

Work 1. Taking analytical samples from raw materials of different morphological groups (Herb).

Take the middle sample. Separate the three analytical samples by quarting. Give information about the weights of the analytical samples and the purpose of each sample.

Select 3 analytical samples from the provided middle sample and label each one.

Label for Analytical Sample

1. Name of the medicinal raw material;
2. supplier/manufacturer;
3. Batch number of medicinal raw material by the company;
4. Sampling log entry number (to be assigned and affixed to the label when the sample arrives at the laboratory);
5. The date of sampling;
6. The quantity of sample collected;
7. Indication of the type of analysis for which the sample is intended (to be completed as required)
8. Name and signature of the person responsible for sampling;

Work 2: Taking analytical samples from raw materials of different morphological groups (Flowers)

Take the middle sample. Separate the three analytical samples by quarting. Give information about the weights of the analytical samples and the purpose of each sample.

Select 3 analytical samples from the provided middle sample and label each one.

Work 3: Taking analytical samples from raw materials of different morphological groups (Fruit)

Take the middle sample. Separate the three analytical samples by quarting. Give information about the weights of the analytical samples and the purpose of each sample.

Select 3 analytical samples from the provided middle sample and label each one.

Appendix 1

_____

_____

_____

_____

_____

Work 1._____

_____

_____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

_____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

_____

Work 2._____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

Work 3._____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

_____

1. Name of the medicinal raw material

_____

2. Manufacturer _____

_____

3. Batch number of medicinal raw material by the company _____

_____

4. Sampling log entry number _____

_____

5. Date of sampling _____

_____

6. Weight of the sample taken _____

7. Name of analytical sample _____

_____

8. Name and signature of the officer responsible for sampling _____

_____

_____