

**Azerbaijan Medical University  
Teaching methods (Syllabus)  
on "Pharmacognosy III"**

**"Approved"  
chief of department of  
Pharmacognosy, prof. J.I.Isayev**

**Signature: \_\_\_\_\_  
Date: 14.09.2021**

<b>Course Unit Code:</b>	
<b>Type of Course Unit:</b>	<b>Mandatory</b>
<b>Semester:</b>	<b>VII</b>
<b>Number of credits:</b>	<b>2</b>
<b>Language of Instruction:</b>	<b>Azerbaijani, Russian, English</b>
<b>Instructor (Lecturer):</b>	<b>prof.J.I.Isayev prof.Y.B.Karimov associate professor S.Sh.Aliyeva associate professor S.E.Aliyeva senior teacher E.H.Karimli senior teacher A.S.Shukurova assistant N.T.Babayeva</b>
<b>Telephone number (Cell):</b>	<b>(012) 597- 45- 40</b>
<b>E mail:</b>	<b>department_pb@amu.edu.az</b>

**Prerequisites:**

In advance for teaching the course, it is necessary to get the course "Pharmacognosy-1" and "Pharmacognosy-II"

**Co-Requisites:**

It is not necessary to teach another course at the same time as teaching this course.

**Description of the Course:**

Pharmacognosy as a specialty subject plays an important role in the training of highly educated specialists: bachelors and masters of pharmacy.

Chemical composition and classification of medicinal plants on the topic "Medicinal plants and raw materials containing alkaloids", which is the largest section on the topic "Pharmacognosy-III", pharmacological investigation methods of raw materials: macroscopic, microscopic, microchemical, phytochemical, biological and commodity analysis; determination of the identity, quality, purity, separation of raw materials from similar plants; standardization of medicinal plant raw materials, structure of pharmacopoeial articles on medicinal plant raw materials, wild and cultivated medicinal plants, supply and efficient use of raw materials, methods for determining the supply of medicinal plant raw materials, resource scientific research, nutritionally important medicinal plants, medicinal raw materials of animal origin are widely interpreted.

**Objectives of the course:**

Study of the composition of medicinal plants containing alkaloids., their analysis, plant enzymes, nutritionally important medicinal plants, medicinal plants of animal origin, instill in

students the provision, standardization and determination of stocks of medicinal plant raw materials.

**Practical habits:**

During the course, students must master the following skills:

1. To determine the identity of medicinal plant raw materials by microscopic methods.
2. To determine the identity of medicinal plant raw materials by macroscopic methods.
3. To determine the presence of alkaloids in medicinal plant raw materials by precipitating reactions.
4. Carry out qualitative reactions on alkaloids and determine to which groups they belong.
5. Obtain an alkaloid complex from the leaves of thorn-apple.
6. Carry out chromatography of alkaloids on a thin layer.
7. Carry out commodity analysis of medicinal plant raw materials.
8. Carry out the acceptance of medicinal plant materials.
9. Carry out microscopic analysis of leaf raw materials.
10. Drafting of articles of the Provisional Pharmacopoeia for medicinal plant raw materials.

**Learning outcomes:**

In the process of teaching this subject, students take the course "Pharmacognosy" and acquire knowledge about medicinal plants.

**Lecture topics of the course:**

1. Alkaloids. Features of chemical structure, classification, physicochemical properties, distribution and accumulation in plants and physiological role in plant life. Scheme of analysis of alkaloid plant raw materials, supply characteristics and use in medical practice. The role of Azerbaijani and foreign scientists in the investigation of medical plants containing alkaloids. Features of the structure of steroid alkaloids and prospects for their use in the synthesis of steroid drugs.
2. Medicinal raw materials of animal and mineral origin. Products of animal and mineral origin. Hydrobionts.
3. Searching for new medicinal plants, ways and methods of learning. Analytical and regulatory documents on medicinal plant raw materials
4. Introduction of medicinal plants. Cultivation of medicinal plants in order to increase productivity. Polyploidy, isolated tissue and cell culture. Determination of stocks of medicinal plant raw materials. Supply, storage and efficient use of the medicinal plant raw materials. Protective measures.

**Topics of the laboratory training on the course:**

N	Topics
1	The medicinal plants and raw materials containing alkaloids: Belladonna leaves, Henbane leaves, Datura leaves, Scopolia, Flueggea, Termopsis
2	Strychnine tree, Ergot fungus, Passionflower herb, Rauvolfia root, Catharanthus herb
3	Greater celandine herb, Barberry roots and leaves, Stephania root-tuber, Senecio rhizomes and herb, Colchicum, Nightshade
4	Thea, Capsicum fruits, Ephedra herb, Harmala herb, Yellow-water-lily, Tulip poppy, Fir clubmoss

5	Sphaerophysa herb, Anabasis herb, Cinchona bark, Sophora herb, Poppy seeds, Coca leaves, Carex brevicollis herb
6	Meadow rue herb, Globe thistle fruit, Coffea seed, Aconit root-tuber, Veratrum rhizome and roots
7	Alkaloids analysis. The colloquium on topic “ The medicinal plants consisting of alkaloids”
8	<b>Quiz 2.</b> The medicinal plants and raw material consist of phytoecdisteroids and enzyme: Maralroot rhizome with root, Melon tree (papaya) Medicinal plants using as the food supplement: Chinese cinnamon, Turmeric, Ginger, Saffron crocus, Clove, Cardamom
9	Standardization of the medicinal plant raw material; Normative analytical documents. Acceptation of the medicinal plant raw material. Commodity analysis.
10	Conclusion lesson. <b>Quiz 2.</b>

#### Assessment:

The collection of 100 points required to obtain a credit for the course will be as follows.

Up to 50 points - before the exam

including:

Up to 10 points - attendance

Up to 10 points - free work

Up to 20 points - midterm examination (to be held at the exam center)

Up to 10 points - final examination (to be held at the department).

Up to 50 points - must be collected in the exam.

The exam will be held by test method. Wrongly answered questions delete the points of correctly answered questions.

#### NOTE:

*If a minimum of 17 points is not scored in the exam, the points earned before the exam will not be collected. The points earned during and before the exam are summed and the final amount is evaluated as follows:*

A - "Excellent"	-	91-100
B - "Very good"	-	81-90
C - "Good"	-	71-80
D - "Sufficient"	-	61-70
E - "Satisfactory"	-	51-60
F - "Inadequate"	-	less than 51 points

#### Free works:

Free works is accepted in three ways:

- 2 free work assignments are given during the semester. Completion of each task is evaluated by points. Free work should be in written form, in the form of a word file, the volume of 1-2 pages (font 12).
- Students can also submit free work in the form of PPT. 20-minute presentation on the topic (minimum 20-25 slides).

Completion of the task is estimated at up to 10 points. Plagiarism should not be allowed, as each free work is a collection of individual opinions of the student.

### **Topics of free work on the course of Pharmacognosy-3:**

1. Alkaloids, their characteristics, classification, analysis and application
2. Medicinal plants containing alkaloids from the Solanaceae family
3. Acyclic alkaloids
4. Quinolizidine alkaloids.
5. Quinoline alkaloids
6. Isoquinoline alkaloids
7. Pyrrolidine and pyrrolizide alkaloids.
8. Pyridine and piperidine alkaloids.
9. Indole alkaloids
10. Imidazole alkaloids.
11. Quinazoline alkaloids.
12. Purine alkaloids.
13. Diterpene alkaloids
14. Steroid alkaloids
15. Pharmacognostic properties of *Atropa Belladonna* and its use in medicine.
16. Pharmacognostic properties of *Datura stramonium* and its use in medicine
17. Pharmacognostic properties of *Hyoscyamus niger* and its use in medicine
18. Pharmacognostic properties of *Scopolia carniolica* and its use in medicine
19. Pharmacognostic properties of *Sekurinega suffruticosa* and its use in medicine
20. Pharmacognostic properties of *Thermopsis lanceolata* and its use in medicine
21. Pharmacognostic properties of *Strychnos nux vomica* and its use in medicine
22. Pharmacognostic properties of *Secale cornutum* and its use in medicine
23. Pharmacognostic properties of *Rauwolfia serpentina* and its use in medicine
24. Pharmacognostic properties of *Catharanthus roseus* and its use in medicine
25. Pharmacognostic properties of *Chelidonium majus* and its use in medicine
26. Pharmacognostic properties of *Berberis vulgaris* and its use in medicine
27. Pharmacognostic properties of *Stephania glabra* and its use in medicine
28. Pharmacognostic properties of *Senecio platyphylloides* and its use in medicine
29. Pharmacognostic properties of *Colchicum speciosum* and its use in medicine
30. Pharmacognostic properties of *Solanum laciniatum* and its use in medicine
31. Pharmacognostic properties of *Thea sinensis* and its use in medicine
32. Pharmacognostic properties of *Capsicum annuum* and its use in medicine
33. Pharmacognostic properties of *Ephedra equisetina* and its use in medicine
34. Pharmacognostic properties of *Peganum harmala* and its use in medicine
35. Pharmacognostic properties of *Nuphar luteum* and its use in medicine
36. Pharmacognostic properties of *Huperzia selago* and its use in medicine
37. Pharmacognostic properties of *Glaucium flavum* and its use in medicine
38. Pharmacognostic properties of *Sphaerophysa salsola* and its use in medicine
39. Pharmacognostic properties of *Anabasis aphylla* and its use in medicine
40. Pharmacognostic properties of *Cinchona succirubra* and its use in medicine
41. Pharmacognostic properties of *Sophora pachycarpa* and its use in medicine
42. Pharmacognostic properties of *Papaver somniferum* and its use in medicine
43. Pharmacognostic properties of *Erythroxylom coca* and its use in medicine
44. Pharmacognostic properties of *Carex brevicollis* and its use in medicine
45. Pharmacognostic properties of *Thalictrum foetidum* and its use in medicine
46. Pharmacognostic properties of *Echinops sphaerocephalus* and its use in medicine
47. Pharmacognostic properties of *Coffea arabica* and its use in medicine
48. Pharmacognostic properties of *Aconitum karacolicum* and its use in medicine
49. Spasmolytic medicinal plants

50. Phytoecdisteroids, classification, pharmacological properties and use in medicine
51. Pharmacognostic properties of *Leuzea carthamoides* and its use in medicine
52. Ferments (enzymes) classification, pharmacological properties and use in medicine
53. Pharmacognostic properties of berry and its use in medicine
54. Pharmacognostic properties of pineapple and its use in medicine
55. Biologically active food supplements
56. Pharmacognostic properties of *Cinnamomum cassia* and its use in medicine
57. Pharmacognostic properties of *Curcuma longa* and its use in medicine
58. Pharmacognostic properties of *Zingiber officinale* and its use in medicine
59. Pharmacognostic properties of *Crocus sativus* and its use in medicine
60. Pharmacognostic properties of *Caryophyllus aromaticus* and its use in medicine
61. Pharmacognostic properties of Cardamom and its use in medicine
62. Medicinal raw materials of animal origin
63. Products of the life activity of honey bees
64. Venenum Apium
65. Mel
66. Perga (pollen)
67. Apilacum
68. Propolis
69. Cera
70. Snake venom
71. Preparations from the venom of the common viper
72. Preparations of cobra venom
73. Fish oil
74. Spongilla, chemical composition and use in medicine
75. Spermaset and its practical significance
76. Lanolin and its practical significance
77. Hirudo, medical significance and use
78. Raw materials of mineral origin
79. Naphthalene oil, chemical composition and use in medicine
80. Hydrobionts
81. Rules of collection of the medicinal plant raw materials
82. Pretreatment of the medicinal plant materials.
83. Rules of drying of the medicinal plant raw materials
84. Packaging of the medicinal plant raw materials
85. Rules of storage of the medicinal plant raw materials
86. Standardization of the medicinal plant raw materials
87. Introduction of the medicinal plants
88. Protection measures for the medicinal plants
89. Analytical normative documents on medicinal plant raw materials
90. Rules of acceptance of the medicinal plant raw materials
91. Commodity analysis of the medicinal plant raw materials
92. Numeral indicators of the medicinal plant raw materials
93. Method for determination of extractives in medicinal plant raw materials
94. Method for determination of moisture in medicinal plant raw materials
95. Method for determination of ash in the composition of medicinal plant materials.
96. Determination of minerals in medicinal plant raw materials
97. Determination of organic substances in medicinal plant raw materials
98. Determination of warehouse pests in the composition of medicinal plant raw materials
99. Determination of stocks of medicinal plant raw materials

**Deadline for free works:**

The deadline for submission of free work is 1 week before the end of lesson. Acceptance of independent work should be carried out by teachers outside the classroom. Free work submitted after the deadline will not be considered, regardless of the reason. The results of the free work are recorded in the journal.

**Course work:**

Course work on this subject is not provided.

**Practice:**

None.

**Main Recommended Resources:**

1. Dəmirov İ.A., Manafov Ə.B., İslamova N.A. Farmakoqnoziya, Bakı, 1984, 263 s.
2. Kərimov Y.B., Süleymanov T.A., İsayev C.İ., Xəlilov C.S. Farmakoqnoziya, Bakı, 2010, 741 s.
3. Süleymanov T.A., Kərimov Y.B., İsayev C.İ. Farmakoqnoziya praktikumu, Bakı, 2017, 675 s.
4. Ковалев В.М., Павлий О.Н., Исакова Т.И. Фармакогнозия с основами биохимии растений. Харьков, 2000, 704 сs.
5. Куркин В.А. Фармакогнозия: учебник для студентов фармацевтических вузов. Издание 2-е. Самара, 2007, 1239 с.
6. Муравьева Д.А., Самылина И.А., Яковлев Г.П. Фармакогнозия. 5-е изд. Москва, «Медицина», 2007, 656 с.
7. Фармакогнозия. Лекарственное сырье растительного и животного происхождения. Под редакции Г.П. Яковлева. Санкт-Петербург, «СпецЛит», 2010, 863 с.
8. Bruneten I. Pharmacognosie (Phytochemie Plant medicinalis). Paris: Technique and documentation, 1999, 1120 p.

**Additional Resources**

1. İsayev C.İ., Kərimov Y.B., Əliyeva S.Ş. və d. Farmakoqnoziya test tapşırıqları, Bakı, 2018, 563 s.
2. İsayev C.İ., Qocayeva F.Ə. Dərman bitkilərinin ehtiyatşünaslığı. Bakı, 2011, 91 səh.
3. İsayev C.İ. Tərkibində antrasen törəmələri olan dərman bitkiləri və xammalları. Bakı, 2009, 70 səh.
4. İsmayılova T.N., Xəlilov C.S. Tərkibində vitaminlər olan dərman bitki və xammallar (metodiki işləmə), Bakı, 2001, 47 s..
5. Süleymanov T.A. Tərkibində flavonoidlər olan dərman bitkiləri və xammalları. Bakı, 2007, 84 səh.
6. Süleymanov T.A., Aliyeva S.Sh. Medicinal Plants and the raw materials, containing polysaccharides. Baku, 2012, 75 p.