

PSYCHOTROPIC DRUGS (continued)

I. PSYCHOANALYPTICS: antidepressants, psychostimulants, nootropics, general tonics, adaptogens, analeptics.

A. Actuality. Psychoanaleptics represent various groups of drugs with a wide spectrum of pharmacodynamic effects (thymoleptic, timoretic action, regenerative of cerebral metabolism, endocrine system functions, easier and more appropriate adaptation of the body to harmful factors, etc.).

B. The purpose of the training is to familiarize students with the pharmacological properties of antidepressants, psychostimulants, nootropics, general tonics, adaptogens and analeptics.

C. Learning objectives:

1) The student must **know**: the general characteristic of psychoanaleptics, their origin and chemical structure, classification principles, medicinal forms and routes of administration, mechanism of action, pharmacological effects, indications, contraindications, side effects, the clinical picture of acute and chronic intoxications with some psychotropic drugs and their treatment.

2) The student must **be able to**: prescribe the mandatory psychoanaleptic drugs in the existing medicinal forms and indicate them in specific diseases and pathological conditions.

D. Initial level of knowledge required for interdisciplinary integration:

Human physiology. The reflex principle of CNS activity. The structure of CNS neurons, the basic properties of neurons. The thalamus, the hypothalamus, their role in regulating the functions of the human vegetative system. Participation of the limbic system in regulating the activity of internal organs. CNS mediators (acetylcholine, noradrenaline, serotonin, glutamine, GABA, glycine).

Histology. Notion about the cyto- and myeloarchitectonics of the cerebral cortex. Analytical and synthesis activity of the brain. The gray matter of the brain stem. The structure of the reticulated formation.

Biochemistry. The chemical composition of nervous tissue. The particularities of energetic metabolism, the importance of aerobic glycolysis. Mediators of nerve impulse transmission: acetylcholine, adrenaline, noradrenaline. The importance of the transformation of glutamine, glutamic acid and GABA in nervous tissue.

The pathophysiology. The physiopathology of the subcortical centers of the brain stem. Peculiarities of limbic system pathology.

E. Self-training questions:

1. Antidepressants. Classification. Pharmacokinetics. Mechanism and spectrum of action. Indications, contraindications. Side effects. Clinical picture and treatment of acute intoxication with antidepressants.
2. Psychostimulants (CNS stimulants). Classification. Mechanism and spectrum of action. Indications, contraindications. Side effects. Pharmacokinetics. The clinical picture and treatment of acute psychostimulant intoxications.
3. Nootropics. Classification. The mechanism of action. The effects. The indications. Side effects. Pharmacokinetics.
4. General tonics and adaptogens. Classification. The mechanism of actions. The effects. The indications. Contraindications. Side effects. Pharmacokinetics.
5. Medullary and bulbar analeptics. Classification. Characteristics of groups.

F. Independent work (points 2, 3 and 4 is done in written form while preparing for the lesson)

1.) Brief description of mandatory medicines (Medicinal form .

Mode of administration . Doses (max for one administration, for 24 hours, therapeutic). Mechanism of action. Indications. Contraindications. Side effects.)

1. Imipramine. 2. Amitriptyline. 3. Phenelzine. 4. Pirlindol. 5. Moclobemide. 6. Caffeine. 7. Piracetam. 8. Hopantenic acid. 9. Ginseng. 10. Pantocrine. 11. Pyritinol. 12. Maprotiline. 13. Niketamide. 14. Fluoxetine. 15. Methylphenidate.

No.	The name the medicine	Form of delivery, dosage
1.	Amitriptyline	Tablets 0.01; 0.025; 0.05; 0.075; Capsules 0.025; 0.05;

		Sol. 1%-2 ml in ampoules; Sol. (for internal use) 4%-20 ml in vials
2.	Caffeine	Tablets 0.075; 0.1; 0.2; Sol. in ampoules 10%; 20%-1 and 2 ml.
3.	Phenelzine	Tablets 0.015.
4.	Fluoxetine	Tablets and capsules - 0.01; 0.02.
5.	Ginseng	Fluid extract in bottles 50 and 200 ml; Capsules 0.1; 0.35; 0.5; 1.0. Powder (for internal use) 200.0; Tincture 25, 30, 50 ml.
6.	Imipramine	Tablets 0.01; 0.025; 0.05; 0.075; Sol. 1,25 %-2 ml in vials .
7.	Maprotiline	Dragees . 0.01; 0.025; 0.05; 0.075; Sol. in vials 0.5 %-5 ml and 1.25%- 2 ml.
8.	Methylphenidate	Tablets 0.005; 0.01; 0.02.
9.	Moclobemide	Tablets 0.15; 0.3.
10.	Nikethamide	Sol. 1 and 2 ml in ampoules; Sol. (for internal use) 15 and 30 ml in bottles.
11.	Pantocrine	Tincture 30; 50 and 100 ml; Tablets 0.075; 0.15; Sol. in ampoules 1 and 2 ml.
12.	Piracetam	Capsules 0.4; 0.2 ; tab. 0.2; 0.4; 0.5; 0.8; 1.2; Granules in vials 56.0 Granules in packets 2.8; Sol.(for internal use) 20% and 33%- 125 ml in bottles; Sol. 20% - 5 and 15 ml in ampoules, Sol. 20% - 60 ml in bottles.
13.	Pyritinol	Tablets 0.05; 0.1; 0.2; Tablets 0.1; Syrup 2% - 200 ml
14.	Pirlindol	Tablets 0.025; 0.05;
15.	Hopantenic acid	Tablets 0,25; 0.5 Syrup in vials 10%-50 și 100 ml;

2.) Questions on medical prescriptions.

To prescribe the following drugs in all medicinal forms: 1. Imipramine. 2. Amitriptyline. 3. Phenelzine. 4. Pirlindol. 5. Moclobemide. 6. Caffeine. 7. Piracetam. 8. Hopantenic acid. 9. Ginseng. 10. Pantocrine. 11. Pyritinol. 12. Maprotiline. 13. Niketamide. 14. Fluoxetine. 15. Methylphenidate.

List the groups and drugs used in (for): depressive states, nocturnal enuresis, chronic arterial hypotension, asthenia, mental overwork, oligophrenia, acute brain disorders, alcoholism, migraine, increased work capacity, chronic cerebrovascular insufficiency, mental retardation in children, consequences of brain trauma.

3) **Tests** (Guidelines for Laboratory Work in Pharmacology).

4) **Tables** (recapitulation of knowledge)

Table 1 Spectrum of psychotropic activity of antidepressants

Components of the psychotropic action	Sedative antidepressant effect	Balanced antidepressant effect	Antidepressant with psychostimulant effect
Nialamide			
Moclobemide			
Amitriptyline			
Imipramine			

Fluoxetine			
Maprotiline			
Mianserin			

Note! The presence of the effect is noted with the "+" sign.

Table 2 Side effects of antidepressants

Effects	Atropin like effects	H1-histamine blocker	α -adrenoblocker	Liver toxicity	"cheese reaction"	Serotonin syndrome	Other
Nialamide							
Moclobemide							
Amitriptyline							
Fluoxetine							
Mirtazapine							

Note! The presence of the effect is noted with the "+" sign.

Table 3 Comparative characteristics of psychotropic stimulants and nootropic

Comparative parameters	psychostimulant	nootropics
Modification of the bioelectric activity of the brain		
Acceleration of thinking processes		
Improving thinking processes (memorization, studying)		
Increasing physical activity and work performance		
Reducing the need for sleep		
Drug addiction		

Note! The presence of the effect is noted with the "+" sign.

Table 4 Indications for administration of analeptics

Directions	Niketamide	Caffeine sodium benzoate	Bemegrade	Strychnine nitrate	Cytisine
Cardiogenic shock					
Collapse					
CO poisoning					
Newborn asphyxia					
Paresis and paralysis					
Barbiturate poisoning					

Note! The existence of the indication is noted with the "+" sign.

G. Interactive activity

1. **Experimental and virtual didactic film** (elaboration of minutes, conclusions)
2. **Clinical case** (Guidelines for Laboratory Work in Pharmacology).
3. **Virtual situations** (Guidelines for Laboratory Work in Pharmacology).
4. **Clinical case:**

A treatment course was performed on a patient with astheno-depressive syndrome accompanied by motor inhibition. As a result of the treatment, the patient mood was improved and the motor inhibition decreased.

Determine the group and possible drugs that could be indicated.
Which effects was responsible for the treatment effectiveness?

