

## PSYCHOTROPIC DRUGS

### I. PSYCHOLEPTICS: Sedatives. Anxiolytics ( tranquilizers). Antipsychotics (neuroleptics). THYMOISOLEPTICS ( normothymics ) .

**A. Actuality.** Psycholeptics are medicinal substances, which manifests the following pharmacodynamic properties: antipsychotic, sedative-hypnotic, anxiolytic, normothymic action, etc. These drugs have considerably increased the effectiveness of psychiatric treatment and have found wide use in therapeutics, anesthesiology, neurology, etc.

**B. The purpose of the training is** to familiarize students with the pharmacological properties of sedatives, anxiolytics , antipsychotics and thymoisoleptics .

#### **C. Learning objectives:**

1) The student must **know:** the general characteristic of psycholeptics, 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 psycholeptic 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 role of the thalamus and hypothalamus 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 reticular 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 .

#### **D. Self-training questions:**

1. Psychotropic drugs. Classification. Psycholeptics, psychoanaleptics, psychodysleptics .
2. Sedatives: definition, classification. Mechanism of action, pharmacological effects, indications and side effects of plant drugs, barbiturates, H1-antihistamines, benzodiazepines .
3. Anxiolytics (tranquilizers): definition, classification according to chemical structure. Mechanisms of action and pharmacological effects. Indications, contraindications, adverse reactions. Pharmacokinetics .
4. Antipsychotics (neuroleptics): definition, classification according to chemical structure. Mechanisms of action and pharmacological effects. Indications, contraindications, side effects. Pharmacokinetics .
5. Thymoisoleptics (mood stabilizers): definition, classification according to chemical structure. Mechanisms of action and pharmacological effects. The indications. Side effects of lithium drugs, valproates and carbamazepine.

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

- 1) **Brief characteristics of compulsory drugs:** (Pharmaceutical form. Method of

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

1. Chlorpromazine. 2. Levomepromazine. 3. Perphenazine . 4. Droperidol . 5. Haloperidol. 6. Clozapine. 7. Sulpiride. 8. Diazepam. 9. Phenazepam. 10. Flumazenil. 11. Buspirone. 12. Sodium bromide. 13. Valerian extract. 14. Lithium carbonate. 15. Risperidone. 16. Alprazolam .

<i>No.</i>	<i>The name drug</i>	<i>Form of delivery, dosage</i>
<b>1.</b>	<b>Levomepromazine</b>	Tablets 0.025; Sol. 2.5% - 1, 5 and 10 ml in ampoules ;
<b>2.</b>	<b>Perphenazine</b>	Tablets 0.004; 0.006; 0.01; Sol. 0.25%-2ml; 0.5%-1ml in ampoules ;
<b>3.</b>	<b>Droperidol</b>	Sol. 0.25%-2, 5 and 10 ml in ampoules;
<b>4.</b>	<b>Haloperidol</b>	Tablets 0.0005; 0.001; 0.002; 0.005; 0.01; Sol. 0.2%-10 ml in vials ( for internal use ); Sol. 0.5% - 1ml in ampoules ;
<b>5.</b>	<b>Clozapine</b>	Tablets 0.025; 0.05; 0.1; Granulated 0.5; 1.0; Sol. 2.5% - 2 ml in ampoules ;
<b>6.</b>	<b>Sulpiride</b>	Capsules 0.05; 0.1; 0.2; Tablets 0.2; Sol. 0.5%-100 ml and 200 ml in vials ( for internal use ); Sol. 0.5%-2ml in ampoules ;
<b>7.</b>	<b>Diazepam</b>	Tablets 0.001; 0.002; 0.005; 0.01; Sol. 0.5%-2 ml in ampoules ; Sol. 0.2 and 0.4% - 2.5 ml in rectal tube; Suppository (rectal) 0.01;
<b>8.</b>	<b>Phenazepam</b>	Tablets 0.0005; 0.001; 0.0025; Sol. 0.1%-1ml; 0.3%-1ml in ampoules;
<b>9.</b>	<b>Flumazenil</b>	Sol. 0.1% 5 and 10 ml in ampoules ( i /v);
<b>10</b>	<b>Buspirone</b>	Tablets 0.005; 0.01; 0.03; 0.015;
<b>11</b>	<b>Sodium bromide</b>	Comp. 0.5 Powder 0.5 in envelopes ( for internal use ); Syrup 1%, 2% - 100ml; Sol. 3% - 100ml in vials ( for internal use );
<b>12</b>	<b>Valerian extract</b>	Tablets 0.02 and 0.03; Tincture 25 and 30 ml in vials ;
<b>13</b>	<b>Lithium carbonate</b>	Tablets 0.3 and 0.5;
<b>14</b>	<b>Risperidone</b>	Tablets 0.001; 0.002; 0.003; 0.004; Sol. 0.1%-30 ml in vials ( for internal use );
<b>15</b>	<b>Alprazolam</b>	Tablets 0.00025; 0.0005; 0.001;

2) . **Questions on medical prescriptions.**(is done in writing form while preparing for the lesson)

**To prescribe the** following drugs in all medicinal forms:

1. Chlorpromazine. 2. Levomepromazine. 3. Perphenazine. 4. Droperidol. 5. Haloperidol. 6. Clozapine. 7. Sulpiride. 8. Diazepam. 9. Phenazepam. 10. Flumazenil. 11. Buspirone. 12. Sodium bromide. 13. Valerian extract. 14. Lithium carbonate. 15. Risperidone. 16. Alprazolam.

**List the groups and drugs used in (for):** schizophrenia, psychomotor agitation, acute mania, neuroleptanalgesia, neuro-vegetative imbalance, vomiting, anxiety states, convulsions, spastic states of striated muscles, insomnia, neuroses, potentiation of analgesics.

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

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

*Table 1 Comparative characteristics of neuroleptics from various chemical groups*

Group Effects	Chlorpromazine	Perphenazine	Chlorprothixen	Haloperidol	Clozapine	Sulpiride
Antipsychotic						
Psychosedative						
CNS stimulation						
Antiemetics						
$\alpha$ receptor blockade						
Muscarinic receptor blockade						
Extrapyramidal disorders						
Prokinetic						

Note! The expression of the effects is indicated by the signs:

"++" maximum effect, "+" medium effect, "-" no effect.

*Table 2 Comparative characteristics of neuroleptics and tranquilizers*

Group Effects	neuroleptic	tranquilizers
Antipsychotic		
Tranquilizer		
Antiemetic		
Potentiation of the action of remedies that inhibit the CNS		
Extrapyramidal disorders		
Drug addiction		

Note! the PRESENCE of the effect is expressed 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. **Situation problem**

As a result of the long-term use of a drug for the removal of increased irritability, the patient, against the background of the positive therapeutic effect, developed rhinitis, cough,

conjunctivitis and skin rashes. In addition, a general weakness and the reduction of the memorization process were determined.

What medicine did the patient use?

What are the measures to remove the complications?