Analeptics are general CNS stimulants; they stimulate vitally important centers (respiratory and vasomotor) of the brain.
1. **DIRECT-ACTING** drugs, which stimulate centers of the medulla oblongata:
   - Bemegridum, Aethymizolum, Coffeinum

2. **REFLECTORY-ACTING**: cause reflectory stimulation of the respiratory center due to H-cholinoreceptors of the sinus caroticus stimulation.
   - Cytitonum, Lobelinum

3. **MIX-ACTION ANALEPTICS**: They act as directly on the respiratory and vaso-motor centres, as reflectory on the chemoreceptors of vessels.
   - Cordiaminum, Camphora, Sulfocaphocainum
Analeptics, act mainly on the cortex of the brain: Caffeine

Analeptics, act mainly on the subcortex centers: Bemegride, Aethymizole, Cytitonum, Lobelinum, Cordiamine, Camphor, Sulfocaphocaine

Analeptics, act mainly on the spinal cord: Strychninum
INDICATIONS FOR USE OF ANALEPTICS:

- Hypoxias, respiratory failure
- Overdosing or poisoning with narcotic drugs, general anesthetics, alcohol, hypnotic drugs
- To speed up awakening action after narcosis
- Asphyxia of newborns;
- Shocks, collapses
- Prophylaxis of lung atelectasis and pneumonia
SIDE EFFECTS

- Nausea, vomiting
- Seizures
- Increasing of reflex excitation
- Hyperventilation
- Cardiac arrhythmia
**Bemegridum** - amp. 0,5% - 10 ml

**Aethimizolum** - tab. 0,1; amp. 1-1,5% - 3-5 ml

**Camphora** - bottles 10-20% - 30 ml alcohol solutions for external use

**Sulfocamphocainum** - amp. 10% - 2 ml

**Cordiaminum** - amp. 1-2 ml, bottles 30-40 ml (for internal use)
PSYCHOSTIMULANTS (PSYCHOMOTOR STIMULANTS)

- Derivatives of purine – Caffeine
- Phenilalkilamines – Phenamine (Amphetamine)
- Phenilalkilsydnnonimins - Sydnocarb
- Stimulate intellectual activity, speed up thinking processes, temporarily eliminate tiredness, somnolence

- Eliminate such manifestations of neurosis as: subdepression, fatigue, retardness

- Aren’t able to eliminate endogenous depression, which accompanies psychic diseases
INDICATIONS FOR USE:

- To increase mental and physical workabilities.
- Psychiatria, neurologia – narcolepsy, depressions, apathy, asthenia.
- Depressions of CNS after neuroleptics, tranquillizers, hypnotics usage.
- In case of poisoning with alcohol
- Chronic alcoholism with fatigue, depression, weakness
- As analeptics in case of collapse states,
**Coffeinum-natrii benzoas** - tab. 0,1-0,2; amp. 10-20% - 1-2 ml

**Phenaminum** - tab. 0,01

**Sydnocarbum** – tab. 0,005 - 0,01 - 0,025.

**Theobrominum** – tab. 0,25.

**Theophyllinum** – supp. 0,2
CAFFEINE
Mechanism of action

- Binding with adenosine ("purine") receptors in brain (endogenous ligand of these receptors – adenosine - decreases processes of excitation in CNS)

- Inhibiting of phosphodiesterase, which leads to accumulation of cAMP and stimulation of many physiological processes and metabolism
Pharmacological properties of Caffeine

Vessels
- Stimulation of vasomotor center – contraction of vessels, increasing of BP
- Peripheral myotropic spasmylotropic action – dilation of vessels, decreasing of BP

Heart
- Central action (increasing of n. vagus tone) – bradycardia
- Peripheral action (direct influence on heart) – tachycardia, possible extrasystolia

Diuretic effect
- It has a mild diuretic action that increases urinary output of sodium, chloride and potassium

Gastric mucosa
- Since all methylxantines stimulate secretion of hydrochloric acid (HCl) from the gastric mucosa, individuals with peptic ulcers should avoid beverages containing methylxantines
Contraction of brain vessels

Dilation of kidney vessels, increasing of diuresis

Dilation of coronary vessels

In case of depression of centers of brain stem (medulla oblongata) caffeine shows stimulating properties, increases blood pressure, stimulates breathing – analgetic action
If administered regularly – psychological addiction – theism, which is accompanied by development of abstinent syndrome (headache, retardness, fatigue, somnolence, depression)

Insomnia, anxiety, agitation

Acute poisoning in case of overdosing (lethal dose – 10g for caffeine – about 100 cups)
NOOTROPIC DRUGS
(NEUROMETABOLIC CEREBROPROTECTORS)

CLASSIFICATION

- Derivatives of pyrrolidone – Pyracetam (Nootropil)
- Derivatives of GABA – Aminalon, Sodium oxybutyrate
- Neuropeptides – Melatonin, Sinacten-depo
- Cerebrovascular drugs – Sermion (Nicergoline), Cavinton (Vinpocetine), Stugeron (Cinnarisine), Pentoxyphylline (Trental), Xantinol
  nicotinas
- Derivatives of piridoxine – Piritinol (Encephabol)
- Antioxidants – Mexidol, Tocopherole acetate
- Other – Cerebrolysine, Actovegin, Solkoseryl, plant preparations
Improvement of brain blood circulation, promotion of collaterals development

Psychostimulating effect, antiasthenic action

Sedative, antidepressive action

Antiepileptic, antiparkinsonsonic action

Nootropic action

Mnemotropine action

Vasovegetative action

Antihypoxic action
INDICATIONS FOR USE OF NOOTROPIC DRUGS

- Atherosclerosis of brain, vascular parkinsonism, Alzheimer's disease
- Disorders of brain blood circulation in case of traumas and intoxications, vascular diseases of brain
- Diseases of CNS, accompanied by decreasing of intellect, memory
- Disorders of psychology (in elderly with schizophrenia, depressions)
- To decrease manifestations of abstinence (alcoholism, drug addiction)
- In neurology (neurasthenia, migraine, neuralgias, radiculitis)
- In pediatrics in case if mental insufficiency
PYRACETAMUM, (NOOTROPIL) - tab. 0,4-0,8; caps. 0,4; amp. 20% - 5 ml

AMINALONUM, (GAMMALON) - tab. 0,25.

NATRII OXYBUTYRAS - amp. 20% - 10 ml