



**MEDICINAL RAW  
MATERIAL OF ANIMAL  
ORIGIN**

# Plan

- Snake venom
- Hive products (Honey , Bee venom, Pollen load, Bee bread, Royal jelly, Bee wax, Propolis)
- Leeches
- Velvet antlers
- Shilajeet
- Shellac
- Lanolin
- Ambergris
- Spermaceti
- Preserved medical bile
- Blood



# SNAKE VENOM – *SERPENS VENENUM*



## *Viperidae* family



common European viper (*Vipera berus* L.)



blunt-nosed viper (*Vipera lebetina* L.)

## *Elapidae* family



Caspian cobra (*Naja oxiana* Eichw.)

## *Crotalidae* family

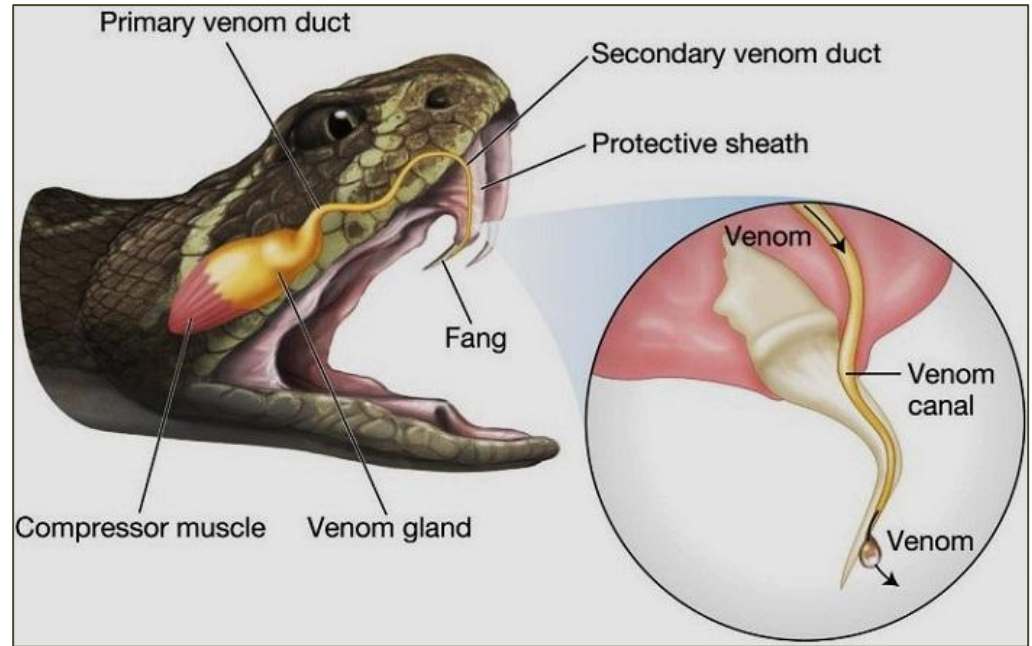


mamushi (*Ancistrodon blomhoffii* Boulenger)

# SNAKE VENOM – *SERPENS VENENUM*



## Snake venomous glands



# SNAKE VENOM – *SERPENS VENENUM*



## Snake venom composition



- **proteins:** viperotoxin, crototoxin - hemodynamic disorders; cobrotoxin – neurotoxic action
- **enzymes:** hyaluronidase, phospholipase A<sub>2</sub>, phosphoesterase, DNAase, ATPase, nucleotide pyrophosphatase, etc.; the cobra venom also contains acetylcholinesterase, alkaline phosphatase

## Application

Snake venoms are used in the treatment of epilepsy, radiculitis, lumbosacral radiculitis, rheumatism, bronchial asthma, as well as in arthritis, neuritis, polyarthritis, myositis.



# HIVE PRODUCTS

Honey bees (*Apis mellifera* L., *Apidae*)

## PURIFIED HONEY – *MEL DEPURATUM*

- 70-80% of invert sugars (40% of fructose, 39% of levulose, 25-37% of glucose, 0,4% of sucrose, 0,45% of dextrose, over 6% of maltose)
- proteins, amino acids
- enzymes: invertase, amylase (diastase), catalase, oxydase etc.
- Vitamins
- organic acids (malic, lactic, oxalic, citric, tartaric)



### Application

Honey shows the immune-modulating, sedative, analgesic, laxative, anti-inflammatory, expectorant, antibacterial, anti-protist, antibacterial activity, it is a preserving agent.



# HIVE PRODUCTS

Honey bees (*Apis mellifera* L., *Apidae*)

## BEE VENOM – APITOXINUM

- polypeptides (melittin (up to 50%) contains 26 amino acid residues, apamin - 18 amino acid residues (its anti-inflammatory activity 100 times exceeds that of hydrocortisone), minimin contains 22 amino acid residues)
- amino acids
- enzymes: phospholipase A<sub>2</sub>, hyaluronidase
- volatile compounds



### Application

In small doses the bee venom shows anti-inflammatory, spasmolytic, anticoagulant properties, and also lowers the blood cholesterol levels.



# HIVE PRODUCTS

Honey bees (*Apis mellifera* L., *Apidae*)

## POLLEN LOAD – *APIS POLLEN*

- essential fatty acids
- amino acids, proteins
- enzymes: catalase, amylase, invertase
- volatile compounds
- polyphenols (flavonoids)
- vitamins, minerals



### Application

The pollen load is a concentrated product that is used in medicine, cosmetology, and diet. It normalizes the GIT, nervous, immune and endocrine system functioning, improves the lipid metabolism, liver, renal, urinary bladder functions.



# HIVE PRODUCTS

Honey bees (*Apis mellifera* L., *Apidae*)

## BEE BREAD – PERGA

- sugars
- amino acids, proteins
- enzymes: amylase, invertase, pepsin, lipase
- Vitamins
- Minerals
- Organic acids
- lipids



## Application

The bee bread normalizes the GIT, liver, thyroid gland functioning, improves the blood circulation, has antitoxic properties, can suppress tumor development, improve growth, favors the body weight gain, is a natural antibiotic and anabolic agent.

# HIVE PRODUCTS

Honey bees (*Apis mellifera* L., *Apidae*)

## ROYAL JELLY – *APILACUM*

- about 65% of water
- proteins, nucleic acids
- enzymes: amylase, glucooxidase, ascorbate oxidase, catalase, invertase, protease, phosphatase
- Vitamins
- Minerals
- Organic acids
- lipids



### Application

The royal jelly has the bacteriostatic, bactericidal, general tonic and antispasmodic activity, increases the body resistance, stress tolerance, stimulates metabolism, lowers the blood cholesterol level, stimulates the CNS; it is also a high-quality dietary product.



# HIVE PRODUCTS

Honey bees (*Apis mellifera* L., *Apidae*)

## BEE WAX – CERA

- alkyl esters of fatty and wax acids (about 72%), chiefly myricyl palmitate  $C_{15}H_{31}COOC_{30}H_{61}$ ; myricyl stearate; free cerotic acid  $C_{26}H_{53}COOH$  (about 14%)
- aromatic substance cerolein
- cholesterol esters
- pollen
- propolis (bee glue)



## Application

Yellow wax is a stiffening agent and is an ingredient in yellow ointment. It is also used as a base for cerates and plasters. Commercially, it is contained in a number of polishes. White wax is employed pharmaceutically in ointments and in cold creams.



# HIVE PRODUCTS

Honey bees (*Apis mellifera* L., *Apidae*)

## PROPOLIS, BEE GLUE – *PROPOLIS*

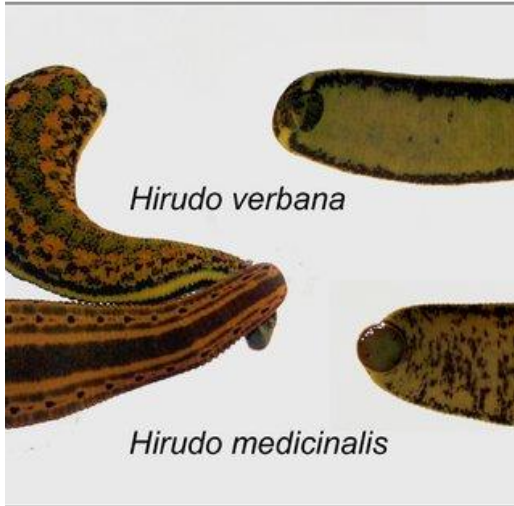
- phenolic compounds (58%)
- bee wax (24%)
- terpenes (0.5%)
- lipids and waxes (8%)
- mineral elements (Mn, Cu, Zn)
- organic acids
- vitamins (C, B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>5</sub>, E)
- secretion of the salivary glands



### Application

Propolis has the antibacterial, antiviral, antifungal, wound healing, anti-inflammatory, astringent, antipruritic, anti-radiation, deodorant, analgesic, hepatoprotective, desensitizing, antitoxic, diuretic, cholagogue, antioxidant, immune stimulating and hypotensive activity.

# LEECHES – *HIRUDINES*



Secretion of the salivary glands

- polypeptides: hirudin, a thrombin inhibitor, bdeellins – trypsin and plasmin inhibitors
- enzymes (hyaluronidase, collagenase)
- Prostaglandins
- histamine-like compounds

## Application

The secretion that leeches excrete to the blood flow has the spasmolytic activity, strengthens the vessel walls, favors physiological parameters of the heart functioning, blood diffuence and microcirculation improvement. Hirudotherapy has a complex healing effect on the cardiovascular system, provides good results in the treatment of arterial hypertension, varicose veins, thrombophlebitis, hemorrhoids.



# VELVET ANTLERS – *CORNIBUS ARBOREIS*

Maral (*Cervus elaphus sibiricus* Sev.), elk (*Cervus elaphus xanthopygus* Milne-Edwards), spotted deer (*Cervus nippon hortulorum* Swinhoe)



They contain 52-57% of organic substances and 30-35% of mineral ones.

- amino acids
- lipids, among which phosphatides, cholesterol and cholesterol esters



## Application

Velvet antlers are applied as a tonic in fatigue, neurosis, neurasthenia, after acute infectious diseases, in the heart muscle weakness, hypotonia.



# SHILAJEET (*MUMIJO*, *MUMJO*, *SALADJD*)

Some pika species (*Ochotona* genus, *Ochotonidae* family), or flying squirrels (*Pteromys volatis* L., *Sciuridae* family)



- amino acids
- mono- and polyunsaturated fatty acids (oleic, petroselinic, linoleic, linolenic, etc.),
- phospholipids
- organic acids (hippuric, benzoic, adipic, succinic, citric, oxalic, usnic)
- essential oil; resins, steroids, carotenoids, chlorophyll
- tannins, coumarins, flavonoids,
- vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>6</sub>, B<sub>12</sub>, C, E, as well as 60 macro- and microelements

## Application

Shilajeet has adaptational, wound healing, antibacterial, anti-inflammatory properties.



# SHELLAC – SCHELLACUM

Lac bug – *Laccifer (Lachardia) lacca* Kerr (*Coccidae*)



- 6% of wax
- 70-85% of resin
- a mixture of aliphatic and aromatic acids, as well as their lactones and lactides



## Application

Purified shellac is used as a coating and a separating agent in food industry (food additive E904), in pharmacy – for tablet and dragee coating.



# WOOL FAT (LANOLIN ) – LANOLINUM

Sheep *Ovis aries* L., Fam. *Bovidae*



- alcohols (44-45%), cholesterol and isocholesterol, agnosterol, lanosterol and the esters of alcohols combined with lanoceric, lanopalmitic, carnaubic, myristic, a little oleic, and other fatty acids



## Application

Lanolin is largely used as an emollient and for promoting the absorption of drugs by the skin. Anhydrous lanolin is a water-absorbable ointment base. Lanolin is an ingredient in many skin creams and cosmetics. However, it may act as an allergenic agent in hypersensitive people.

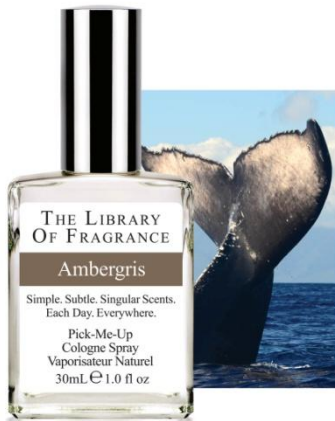


# AMBERGRIS – AMBRA

Sperm whales (*Physeter*, *Physeteridae*)



- non-volatile polyterpene compounds, which give it the property of odor fixation, – ambrein (25-45%), epicoprostanol (30-40%)
- The odor of ambergris is due to volatile compounds (less than 0.3%) – ambroxide, cyclic ketones, aldehydes, highly polymeric alcohols



## Application

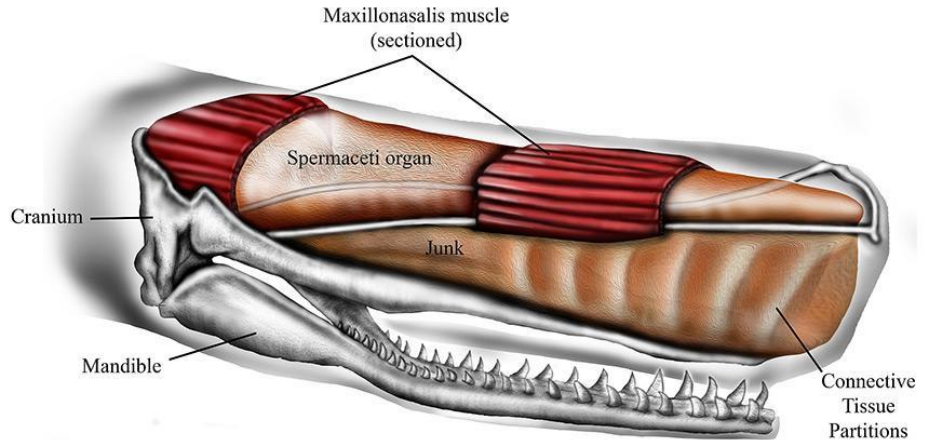
Ambergris is used in perfumery as a scent fixator since it holds aromatic components on the skin slowing their evaporation from the aromatic mixture.

# SPERMACETI – CETACEUM

whale (*Physeter macrocephalus* Linne (Fam. *Physeteridae*))



- mixture of hexadecyl esters of fatty acids. Hexadecyl dodecanoate (cetyl laurate), hexadecyl tetradecanoate (cetyl myristate), hexadecyl hexadecanoate (cetyl palmitate), and hexadecyl octadecanoate (cetyl stearate) constitute at least 85% of the total esters



## Application

Spermaceti is used in pharmaceuticals to harden ointments and cosmetic creams.



# PRESERVED MEDICAL BILE – *CHOLE MEDICATA CONSERVATA*

# BLOOD – *SANGUIS*



Preserved medical bile is used in medicine topically as an anesthetic and anti-inflammatory agent in chronic arthrosis, arthritis, bursitis, and radiculitis. It is also a component of complex medicines for the treatment of liver and gall bladder disorders.

- hydrolysin (a protein medicine for parenteral nutrition, which is obtained by acid hydrolysis of blood proteins of large cattle with addition of glucose)
- infant hematogen (a medicine containing defibrinated blood of cattle, which is used as an adjuvant in anemia of different genesis, especially post-hemorrhagic and iron-deficient ones)
- hemostimulin (hematogen – 0.125 g, iron lactate – 0.250 g, copper sulphate– 0.005 g, glucose – 0.100 g with adding dry food albumin; is used as a hemopoiesis stimulator);
- intact serum, fibrin films are a flexible material in burns, wounds and ulcers;
- peptone is also produced, which is a nutrient medium for the microbiological analysis.

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