



## Development of Standardization Substances and Prerparation with the Apiculture Products is One of the Strategic Research Areas of the National University of Pharmacy

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In recent years in Ukraine, as well as in many countries of the world (Canada, France, Germany, Italy, Spain, the USA, Sweden, Poland, Bulgaria, Romania, etc.), there is an increased interest of practical medicine and pharmacy in apitherapy. Experimental and clinical studies have confirmed that the apiculture products (honey, propolis, bee bread, bee pollen, bee venom, royal jelly, etc.) contain significant amounts of biologically active substances that exhibit therapeutic properties; they have been used as unique natural medicines since ancient times.

The priority in the field of technological and physicochemical studies of the apiculture products, in particular in obtaining of standardized biologically active substances and creating new apiculture drugs on their basis, developing monographs for the State Pharmacopoeia, national standards and technical specifications and technological regulations in Ukraine belongs to the scientific school of the academician of the Ukrainian Academy of Sciences, Doctor of Pharmacy, Professor Shpychak O.S.

Having the pharmacological effect and a broad spectrum of anti-inflammatory, antitumor, immunomodulatory, regenerating, and other properties the apiculture products are successfully used in traditional and folk medicine, cosmetics, food industry and other sectors of the economy. Medicines containing biologically active standardized substances of apiculture products, namely the propolis phenolic hydrophobic drug (PPHD) (Praeparatum Propolis phenohydrophobum, Marketing Authorization UA/4505/01/01, Order No. 730 dated 19.07.2016), powdered honey (PH) (TU U 10.8-39834691-001:2015), the aqueous extract of propolis (Specification SPC-SR-95), etc., have a considerable demand among the population due to their high therapeutic activity and the absence of side effects.

Currently, at the National University of Pharmacy under the supervision of academician Tikhonov O.I. approximately 70 apicul-

ture drugs have been created, they are manufactured by the pharmaceutical industry of Ukraine and other countries, and about 8 new, promising, qualitative and safe drugs based on the standardized substances standardized substances of the apiculture products are being developed. Among them the following medicines should be mentioned.

“API-IMMUNO-VIT” CAPSULES – the immunomodulatory drug of the natural origin based on bee bread and powdered honey.

### Pharmacological properties

The drug has a marked immunomodulatory, antioxidant, vitamin and regenerating action. It is used as a medication that improves immunity in different forms of viral, bacterial diseases and immune pathologies.

### Indications for use

Infectious and viral diseases contributing to decreased immunity, immune deficiency, etc.

“PROPLANTMED” CAPSULES – the drug for the treatment of gastric ulcer and duodenal ulcer. There three active components of the apiculture products in its composition.

### Pharmacological properties

It is a drug of the natural origin with the antiseptic, anti-inflammatory, spasmolytic action; it promotes tissue regeneration and activates gastric secretion.

The antiseptic effect (against staphylococci, *Pseudomonas aeruginosa*, hemolytic streptococcus) is due to the presence of phytoncides and phenolic compounds.

The anti-inflammatory wound and ulcer healing effects are associated with the presence of polysaccharides, pectin substances and tannins, benzoic and salicylic acids, oxycumarines and chromosome derivatives.

This drug regulates digestion, increases appetite, reduces the tone of smooth muscles of the stomach and intestines, exhibits the anti-inflammatory and regenerating effect in gastritis, gastroduodenitis and other diseases of the gastro-intestinal tract of the inflammatory nature. Iridoid glycosides aucubin, catapol and bitters in its composition intensify secretion of the gastric juice, increase the acidity of the gastric contents.

Due to the mucus, enzymes, and phytoncides the drug developed reveals the restorative and protective function of the gastro-intestinal tract tissues.

Saponins, hydroxy-cinnamic acids, flavonoids and pectin substances promote reduction of cholesterol levels in the blood.

“PROPOLIS” EYE DROPS – eye drops with propolis are used in ophthalmology for the treatment of a wide range of inflammatory eye diseases (bacterial, allergic, infectious allergic), such as conjunctivitis, blepharitis, keratitis etc. «Propolis» is non-toxic, does not show the irritating, allergic effect, well tolerated, promotes more rapid tissue regeneration and provides formation of more gentle scars. It is effective for elimination of allergic reactions of the conjunctiva that can appear when using solutions of antibiotics, sulfanilamides.

#### Indications for use

It is indicated for penetrating and non-penetrating wounds of the cornea, thermal and chemical burns of the conjunctiva and cornea of the I-II degrees, surface traumatic and infectious keratitis, conjunctivitis, etc. The action includes reduction of irritation, itching, pain and lacrimation.

“PROPOLIS” GEL – the drug for treating acne and rosacea. “Propolis” contains such active components as the propolis phenolic hydrophobic drug (PPHD) and azelaic acid; these substances exhibit the antimicrobial action. In addition to the antibacterial action, the drug directly affects follicular hyperkeratosis. When using «Propolis» drug along with decrease in the density of colonization of *Propionibacterium acnes* bacteria there is decrease in the fraction of free fatty acids in lipids of the epidermis, as well as inhibition of keratinocyte proliferation and normalization of the disturbed processes of the terminal differentiation of the epidermis. The mechanism of action in rosacea has not been elucidated; however, it is assumed that the positive effect is achieved due to the anti-inflammatory action of PPHD. “Propolis” drug is non-toxic, when applying the gel or cream on the large skin areas and under the occlusive dressing the development of undesirable effects has not been observed. When used locally azelaic acid penetrates into the deeper layers of the skin. Approximately 5.6 % of the active

components of the drug absorb in the systemic blood and excreted by the kidneys in the unchanged form and as metabolites.

“CRYOBIOSOL” AEROSOL and “ARTPROMENT” GEL – medicines developed on the basis of the standardized substance of PPHD, local anesthetics – lidocaine hydrochloride and articaine hydrochloride, as well as menthol and rosemary oil.

#### Pharmacological properties

The aerosol and gel exhibit the analgesic, anti-inflammatory, local anesthetic and anti-edema action. They stimulate and accelerate the recovery of damaged tissues.

#### Indications for use

It is indicated for treating traumatic injuries in organs of the locomotor apparatus accompanied by sports traumas (bruises, dislocations, sprains, ruptures of ligaments and tendons, preparation of muscles to physical load, etc.).

“APISED” CAPSULES – a new complex medicine developed on the basis of the standardized substance of natural powdered honey and the medicinal plant raw material.

#### Pharmacological properties

These capsules exhibit the general tonic, immunomodulatory, sedative, and mild anxiolytic effect.

#### Indications for use

It is recommended for treating pathological conditions accompanied by the extended physical and psychological overexcitation of the organism, as well as neurotic disorders, including those in sports medicine to relieve stress in the period of rehabilitation and the efficiency restoration of sportsmen.

Therefore, the strategic importance of the research area in creating medicines based on the apiculture products and their standardized substances and introducing them into practical pharmacy has been theoretically substantiated and practically confirmed by the scientific school (professionals of Ukraine) headed by academician Shpychak O.S.

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