

# GENUS *ECHINACEA* MOENCH IN UKRAINE: SIXTY-YEAR EXPERIENCE OF STUDYING AND USING

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In spring 2006 it will be 60 years since representatives of genus *Echinacea* Moench began to be studied, cultivated and used in Ukraine. For this period a great purposeful work has been done, results of which have following main direction:

**Introduction, Biology and Cultivation.** From 9 species of genus 7 are introduced. From them only 3 species are being cultivated. Moreover *Echinacea purpurea* (L.) Moench occupies the largest sowing square (about 500 ha). *E. purpurea* is represented by varieties of home selection: "Princess", "Vitaverna", "Polisska Krasunya" and "Zirka Vavilova" (Star of Vavilov); *E. pallida* is cultivated by a new variety "Krasunya preri" (Prairie's Beauty) is selected by the authors of this publication on squares that do not exceed 50 ha; *Echinacea angustifolia* D.C. (1 ha) is formed as a typical and homogeneous population. Other species: *Echinacea atrorubens* Nutt., *E. papadoxa* Britton, *E. simulata* McGregor, *Echinacea tennesseensis* (Beadle) Small are grown in the collection of research establishments. Biological peculiarities of *E. purpurea* (the questions of morphology, anatomy, cytology, morphogenesis, ontogenesis, physiology, microbiology and ecology) are studied best of all. With *E. pallida*, *E. purpurea*, *E. angustifolia* the selection work is conducted. The main means of cultivation are worked out that include following: means of presowing seed preparation, sowing and seedling planting, fertilizer system, pest control, protection from diseases and weeds, terms of raw material harvest, drying and storage.

**Phytochemistry and Pharmacology.** The main studied species is *E. purpurea*. Research questions are accumulation of aminoacids, lectins, polyphenols, polysaccharides, vitamins, macro- and microelements (including toxic), radionuclides and also criteria of raw materials and preparations standardization.

**Medical aspect of studying and usage.** This direction concerns only *Echinacea purpurea*. Main home medicines are alcohol infusion and water-alcohol extract. Their immunomodulate and radioprotective qualities are proved. They are successfully used at the treatment of allergic, pulmonary, gastric, venereal, otorinologic, stomatologic diseases. Antioxidant, antimicrobial, anti hipoxic, hepatoprotective, adaptogenic qualities are established by many times researches. Their usage at endocrine and cancer pathologies is being mastered by practice. Molecular mechanisms of influence on blood cells are worked out. Output of their different cosmetic and homeopathic preparations is adjusted.

**Veterinarian and zootechnical aspect of usage.** The usage of *E. purpurea* as medicinally-fodder plant in a fresh and dry state of above and under parts is grounded. Preparations of prolonged action for the treatment of suppurative wounds, pulmonary, gastric and parasitic diseases of animals are have been made. The usage of *E. purpurea* for the treatment of sterility, increase of reproductive functions of bulls and boars and also introduction into piglets' sows, laying hens' ration is especially effective.

**Usage in beekeeping.** It has been established that *E. purpurea* and *E. pallida* are valuable honey plants, their flowering lasts from May till August. Moreover they have a good nectar (from 23 to 60 kg/ha) and pollen productivity (from 40 to 130 kg/ha). Pure honey from *Echinacea* was received firstly. This honey distinguishes on physical-chemical quality and has expressed medicinal activity. On the base of beekeeping products with the adding of *E. purpurea* extract medicinal honey and balsam with high adaptogenic qualities are made.

**Working out of functional products.** These products are made on the base of *E. purpurea*. Water, alcohol, water-alcohol extracts are used as biocorrectors of mineral waters, fruit juices, liqueur-vodka, confectionery and dairy products and also tea and coffee. Moreover, immunostimulate and radioprotective qualities of received products are grounded.

Thus this material testifies that *E. purpurea* is studied deeper and thoroughly in Ukraine. Research and usage of other introductive *Echinacea* species can be not less effective and promised.

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