

Biopharmaceuticals of Plant Origin with Health Importance

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The study of natural products of plant origin in all areas of modern medicine, agriculture, biology and others is increasingly relevant due to the great possibilities for application. Thus, with natural products of plant origin, a number of progressive poly-pathogenic neurodegenerative diseases are successfully influenced, in which the combination of various mechanisms and risk factors causes anatomical, cellular and molecular changes, leading to disruption of higher cortical functions, memory deficits, learning disorders, behavior and functions and a total collapse of intelligence and mental activity. Amyloid-activated microglial cells release proinflammatory cytokines. The study of the sequence of amino acids in A β 42-peptides allows the specification of their precursor. Its abnormal degradation leads to the formation of A β 42-peptides, which are involved in amyloidogenesis and neurotoxic adhesive amyloid peptides: 90% A β 40-peptides and 10% A β 42- involved in amyloidogenesis. It has been established that a dynamic equilibrium exists in the body between the formation of reactive oxygen species and the function of protective antioxidant systems (superoxide dismutase, catalase, glutathione peroxidase, glutathione reductase, glucose-6-phosphate dehydrogenase). Bulgarian pharmacologist D. Paskov studies the alkaloid Galantamine is most widely distributed in representatives of the family Amaryllidaceae: Caucasian snowdrop (*Galanthus woronowii* Losinsk), snowdrop (*Galanthus nivalis* L., *Galanthus elwesii* Hook. Fil. marsh snowdrop (*Leucojum aestivum* L.) - Pharmacological studies of Galantamine prove: nervous system: 1) reversibly inhibits acetylcholinesterase, which leads to the accumulation of acetylcholine and to indirect cholinomimetic effects, 2) allosterically potentiates α 7-subtype nicotinic acetylcholine receptors, thereby enhancing dopamine and γ -aminobutyric acid neurotransmission, 3) improves learning and memory processes. Unsaturated higher fatty acids with 20 or more carbon atoms, three or more double bonds are essential components of cell membranes, can modulate physiological processes including membrane transport, receptor function and enzyme activities, and have been shown to have marked effects on various immunological and haemostatic parameters. In Alzheimer's disease, oxidative stress occurs as a result of a disturbance in the balance between endogenous or exogenous overproduction of reactive oxygen species and a decrease in antioxidant defense mechanisms. Parkinson's disease (PD) is considered the second most common neurodegenerative disorder that affects approximately 1% of the world population older than 65 years, representing up to two-thirds of all patients with movement disorders throughout the world. PD has become increasingly more common with advances in age, reaching the proportions of 2.6% of the population over 85 years old. In addition, some data suggest that by 2020, motor development disorders will be developed worldwide as secondary to PD. During the pathogenesis of PD, the production of oxygen-reactive species damages the substantia nigra through lipid peroxidation, protein oxidation, and DNA oxidation. The use of various substances of plant origin, such as galantamine from snowdrop, omega unsaturated fatty acids, antioxidants and other substances leads to the creation of biopharmaceutical products and food supplements, which significantly increase the quality of healthcare.

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References

Food Additives Unit Chemical Safety and Toxicology Division, Food additives legislation Guidance notes, London WC2 6NH, March, 2002

Virtanen JK et al., Fish consumption and risk of subclinical brain abnormalities on MRI in older adults, *Neurology*, 2008; 71: 439–446

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