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FLAVONOID ANTIOXIDANT

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Introduction. **Flavonoid antioxidants** are multifunctional compounds of various nature, capable of eliminating or inhibiting free radical oxidation of reactive oxygen species (ROS) and nitrogen (RNS). Excessive formation and/or insufficient removal of reactive molecules, reactive oxygen species (ROS) and nitrogen (RNS) as a result of the generation of free radicals and unbalanced action of the endogenous antioxidant system leads to oxidative stress with oxidative damage and cell dysfunction. The generation of free radicals by the unbalanced action of the endogenous antioxidant system leads to oxidative damage with macro- and microvascular cell dysfunctions. The role of free radicals and oxidative stress in the pathogenesis and development of complications of various pathologies has been established. Antioxidants play an important role in protecting biological substrates from oxidation of cell membrane structures. They distinguish:

1. enzymes - antioxidants: superacid dismutase, catalase, peroxidase, glutathione reductase, etc.;

2. macromolecular non-enzymatic components: iron carrier protein (transferrin) and other blood serum proteins capable of binding iron ions (ceruloplasmin, haptoglobin, hemopexin);

3. low-molecular components (thyroxine, flavonoids, steroid hormones, vitamins A, E, D, ubiquinone, low-molecular SH-compounds and ascorbic acid).

From synthetic antioxidants in industry, biology and medicine, numerous compounds of phenolic nature are used (butyloxyanisole, butyloxytoluene-ionol), naphthols, organic sulfur compounds, primarily aminothiols (betamercapropethylamine, betamercaprotropilamine), 3-oxypyridines (emoxipin, mexidol), etc. Many natural amino acids (tocopherol, gallic acid derivatives, etc.) have been synthesized. Flavonoids have the ability to bind free radicals - the complex of flavonoids with an antioxidant has a pronounced anti-inflammatory effect. Bioflavonoids - antioxidants are plant nutrients of fruits and vegetables.

Materials and methods. Due to the fact that these reviews are devoted to the study of the properties of flavonoids, it was appropriate to determine the activities of antioxidant enzymes. The list of methods for determining the activity of antioxidants, the effect of which was evaluated in various pathological conditions, is given.

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Results and their discussion. The role of free radicals and oxidative stress in the pathogenesis and development of various diseases has been established [3]. Oxidative stress is defined as excessive formation and/or insufficient removal of reactive oxygen species (ROS) and nitrogen (RNS) as a result of the generation of free radicals and unbalanced action of the endogenous antioxidant system. The generation of free radicals by the unbalanced action of the endogenous antioxidant system leads to oxidative damage to cells. Antioxidants are important tools in treatment. Suppression of intracellular free radical generation by antioxidants provides a therapeutic strategy to prevent oxidative stress. Determining the role of oxidative stress and antioxidants in pathogenetic mechanisms for the purpose of directed correction was expedient for offering modern methods of treatment with flavonoid antioxidants. The results of research on the action of flavonoids-antioxidants showed that they prevent oxidative destruction of cells.

Conclusions. Studies of flavonoids-antioxidants showed that their activity decreases in various pathological conditions.

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