

Parkinson's disease

Parkinson's disease is a slow- progressive chronic neurological disease which characterized by destructive processes of the extrapyramidal motor system [1] in the elderly.

It is estimated that 6 to 10 million people worldwide have suffered from Parkinson's disease, including all ethnic groups and races. The number of people with PD increases rapidly with age, affecting approximately 1% of the population over the age of 60 and 4% over the age of 80. Most often, the first symptoms of the disease appear in 55-60 years. However, in some cases, the disease can develop before the age of 40 (early-onset Parkinson's disease) or up to 20 years (juvenile form of the disease). Men get sick more often than women.

Nowadays, unfortunately, the reasons that cause the development of Parkinson's disease are poorly studied, but there are risk factors that contribute to the formation, these include [2]:

- genetic predisposition [3]
- transferred neuroinfections [4] [5]
- cerebrovascular insufficiency [6]
- tumors and frequent brain injuries [7] [8]
- exposure to neurotoxins [9]
- environmental factors (salts of some metals, organic solvents, pesticides, herbicides) [9]
- poisoning by many chemicals (ethanol, carbon monoxide, industrial alcohol and others) [10]
- use of drugs that cause extrapyramidal side effects [11]
- deficiency of vitamin D, which protects structural cells of the brain [12] [13]
- long-term residence close to a motorway, railroad or operating enterprise [14]
- physiological aging of the organism, in which the number of neurons is naturally decreased [15]
- oxidative hypothesis [16] [17]

The development of Parkinson's disease is based on a widespread progressive process of loss of functions and structures of neurons, further death and deposition of pathological inclusions in these cells. The motor manifestations of Parkinson's disease are associated with the premature disappearance of dopamine-producing nerve cells in the brain [18].

According to research, one of the best means to prevent the development of pathological processes in an organism is curcumin [19].

Curcumin is the main curcuminoid [20] found in turmeric root [21].

Curcumin is one of the most widely tested natural compounds. Curcumin is one of the most widely tested natural compounds. Laboratory studies have shown that curcumin is therapeutically useful tool for prevention or correction of Parkinson's disease [22] [23]. In the process of research curcumin has been shown to cross the blood-brain barrier [24], to exert a protective effect on neurons (SN) and to increase the amount of dopamine [25] [26].

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In addition, curcumin has multiple pharmacological properties, including antioxidant, anti-inflammatory, anticarcinogenic, cardioprotective, hepatoprotective, antidepressant, immune strengthening, and many others [27].

Unfortunately, these encouraging initial findings were not supported in clinical trials in humans due to very low bioavailability of curcumin, which averaged no more than 0.1% [28]. So low bioavailability prevents curcumin from showing its therapeutic potential when taken as a powder or extract normally.

It is worth noting that laboratory studies with curcumin have greatly increased interest in it all over the world, and this was especially evident in the segment of dietary supplements. On almost every supplement site, you can purchase preparations made from powder or turmeric extract and find information on the pharmacological effect of curcumin on dozens of diseases. This method of presenting information is a substitution of concepts, when laboratory findings are issued as clinical results. Neither turmeric extract, nor powder, is able to provide the pharmacological action that curcumin has shown in laboratory studies.

Increasing the bioavailability of curcumin has been the topic of many research teams for several decades [29]. Several technologies have already been developed to increase the bioavailability of curcumin. The most advanced technology for the delivery of active substances into the blood is liposomal [30].

Liposomal curcumin delivery technology allows to achieve the desired pharmacological effect in humans and animals, which has been demonstrated in thousands of laboratory studies [31] [32] [33].

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