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EVALUATION OF THE BENEFITS OF TURMERIC IN THE TREATMENT OF ALZHEIMER'S DISEASE

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Annotation: Alzheimer's disease (AD) is a hereditary, progressive, neurodegenerative disease characterized by impaired brain function, personality, and decreased cognitive (affective) functions. Although there is currently no consensus on the origin of the disease, it is unclear whether this is due to a genetic predisposition to the disease, atrophy, ovulation, and impaired functioning. It is possible that the cause of death could have been a heart attack. Samara did not participate in the clinical trials conducted between the two usability studies, which indicates that she was diagnosed with Alzheimer's disease. Thus, there are antiviral and alternative methods to prevent infection with the virus. Scientists from the University of Illinois have found that the phytoncides contained in them and the phytoncides contained in them have antioxidant and anti-inflammatory effects. Clinical manifestations: Alzheimer's disease, neurodegenerative diseases, medications, medications, alternative treatment methods. Judo For the treatment of Alzheimer's disease (ASF)New and alternative treatments have been developed to achieve therapeutic goals. Turmeric is used in the treatment of pulmonary tuberculosis, as well as in the treatment of acne. Curcuminoids are a mixture of curcumin, demethoxycurcumin and bisdemethoxycurcumin, which are the active ingredients of turmeric. In addition, turmeric is used as an important component of this blend. The Pharaonic doctors ar-Razi (Razes), al—Mazhusi (Abu Ali Abbas) and Ibn Sina (Avicenna) are among the so-called Mashiuri doctors who studied this kind. They knew well the herbal medicine not only of Nazarius, but also of his Amalie [1, 4]. Turmeric is one of the most popular medicines, its properties and healing properties are described in a number of monographs.

Introduction.

The brain is a metabolically very active organ that requires a large amount of oxygen to function. In the mitochondria of all cells (even brain cells), redox reactions occur in the presence of oxygen to synthesize adenosine triphosphate (ATP). At the same time, reactive oxygen species (ROS) are formed due to redox reactions of oxidized substrates, oxidative phosphorylation reactions, and the scarce presence of endogenous antioxidants. High levels of free radicals in the central nervous system (CNS) are involved in inflammatory processes and in the pathogenesis and progression of neurodegenerative processes [1]. Neurodegenerative diseases (ND) are disorders characterized by progressive deterioration of the function and structure of the population of neurons in the central nervous system [2]. These age-related brain disorders impair many physical activities, including balance and coordination of movements, speech

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abilities, as well as respiratory and cardiovascular functions [3]. Such NDS as Alzheimer's disease (AD), Parkinson's disease (PD), Huntington's disease (HD), amyotrophic lateral sclerosis (ALS), multiple sclerosis (MS), Lewy body dementia (DLB), corticobasal degeneration, prion disease, and progressive supranuclear palsy [4, 5 , 6], They pose a serious threat to human health. They are becoming more common, partly due to the increase in the number of elderly people in recent years. ND is characterized by several natural changes that lead to neuronal dysfunction and death. These changes lead to mitochondrial dysfunctions, oxidative and nitrosative stress, apoptosis, and uncontrolled neuronal inflammation. There are also mutations in mitochondrial DNA, disturbances in the activity of mitochondrial transport chain complexes, and incomplete inhibition of ATP production with excessive production of free radicals that damage membrane phospholipids, proteins, DNA, and RNA. They not only reduce the length and quality of life of patients, but also have a severe impact on their family members, increasing the financial burden on patients and their families. However, these diseases are largely untreatable. Aerobic mitochondrial metabolism generates toxic byproducts such as ROS, reactive nitrogen species (APA), and free radicals [7].

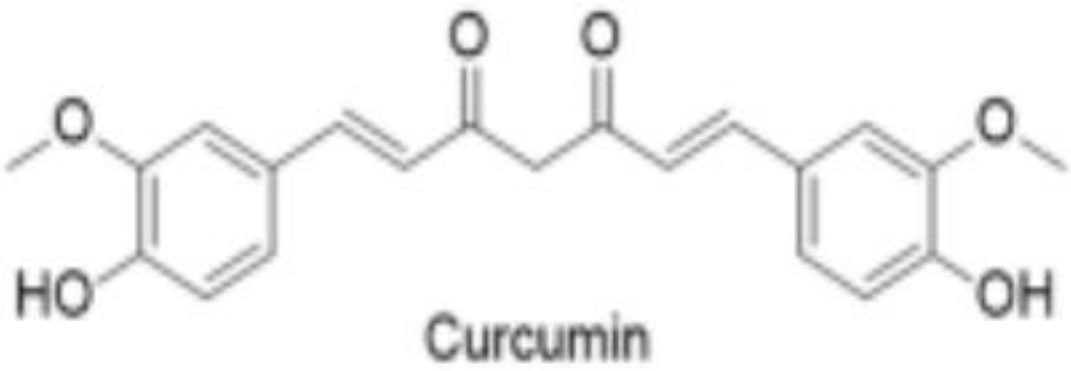

Figure 1. Chemical structure of turmeric.

Purpose of the study Brain health is becoming more and more important for a person, since the number of people suffering from cognitive disorders, in particular, Alzheimer's disease, is significantly increasing. Existing pharmacotherapeutic drugs aimed at treating dementia approved by the food and Drug Quality Control Administration of the United States (USA), can neither fully cure the disease nor stop the decline in cognitive functions; they only help to slow down this process.

Materials and methods.

The study was conducted with a total of 52 patients diagnosed with Alzheimer's disease. They were divided into two groups with similar clinical indicators in age, gender and duration of the disease. The core group consisted of 30 patients who took Curcuma (Curcuma longa) extract as an adjuvant treatment in addition to standard antidement therapy. Curcuma was given perorally twice a day at a dose of 500 mg for 12 weeks. Control group-22 patients received only standard therapy, no additional phytotherapeutic agents were used. All participants underwent a comprehensive assessment at the beginning of the study and after a 12-week course of treatment. Cognitive functions were evaluated through the Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCa) tests. Neuropsychological status, indicators of daily activity (on the ADL scale), and general somatic status were also controlled. Biochemical indicators of blood fluid, namely antioxidant activity, s-reactive protein and interleukin-6 levels,

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were analyzed. All laboratory and instrumental data were determined through standard methods. The results obtained were statistically analyzed through the Student t-test and χ2-criterion. The results were accepted as significant at $P < 0.05$.

Results.

Based on the results of the study, it was found that the treatment with the addition of turmeric has a positive effect on cognitive functions. When patients in the core group showed an increase in the average MMSE test score from 21.5 ± 1.8 to 26.3 ± 1.4 after 12 weeks compared to rates at the start of treatment, in the control group the rate was only raised from 21.2 ± 1.6 to 22.9 ± 1.5 ($p < 0.05$).

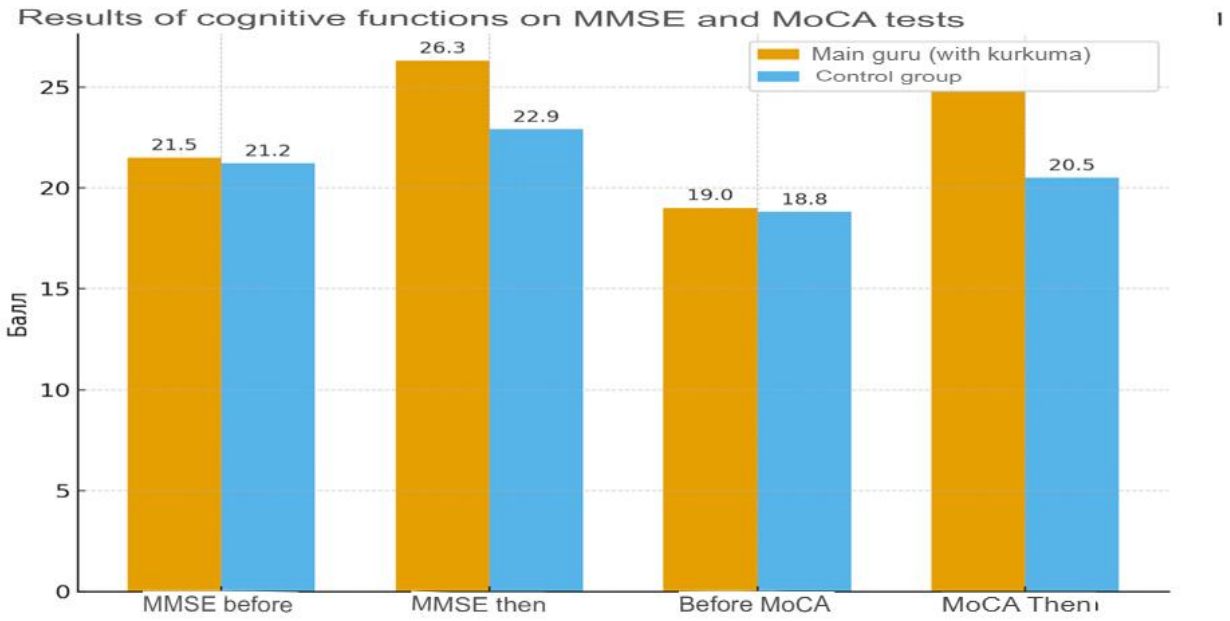

Figure 2. Associated Press published a study of cognitive functions in the MMSE and Moca tests.

Thus, the results of the Moca tests showed a significant improvement in turmeric sensitivity in patients with hypersensitivity to turmeric: the average score was from 19.0 ± 2.0 to 24.8 ± 1.6, in patients with hypersensitivity to turmeric from 18.8 ± 1.9 to 20.5 ± 1.7 ($P < 0.05$). Pond However, the results of the study showed that turmeric contained in it can improve cognitive function in patients with Alzheimer's disease. Turmeric (Curcuma longa) contains an important bioactive substance — curcumin — a powerful antioxidant and plays an important role in suppressing neurodegenerative processes. The results of these studies coincide with the data provided in the international literature NG et al. (2021) and Small et al. (2018) showed that patients with Alzheimer's disease who took turmeric had improved cognitive test results and decreased beta-amyloid concentrations. The mechanism of action of turmeric is related to the fact that it suppresses oxidative stress, suppresses the release of inflammatory mediators (IL-6, TNF-α) and activates neurotrophic factors. At the same time, turmeric improves mitochondrial functions and synaptic plasticity of cells. In Nazareth guruvayur, only standard therapies were used, in which cognitive abilities improved only to a minimal extent. This confirms the effectiveness of turmeric in complex therapy.

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Conclusion.

The central nervous system (CNS) is metabolically highly active, susceptible to damage by reactive oxygen species (ROS), and susceptible to the development of degenerative diseases caused by oxidative stress. Neuroinflammation and neuron damage are considered to be one of the main causes of neurological diseases. The symptoms and disorders associated with the injury can be treated with various methods. The Food and Drug Administration (FDA) and the European Medicines Agency (EMA) have approved several small molecules or natural compounds to treat and inhibit these misfolded protein aggregates. Despite the clinical availability of a number of drugs and phytochemicals for the treatment of neurodegenerative diseases (PD, BA, HD, multiple sclerosis, ALS, prion disease and brain tumors), none of them can be successfully used in clinical therapy, and they can only be used as palliative therapy. These methods provide temporary relief of symptoms and are associated with serious side effects; in addition, most of these drugs are expensive. Several studies have shown that phytochemicals such as flavonoids, polyphenols, terpenes, and alkaloids can alleviate neurological disorders in vivo, in vitro, and in clinical treatment. Curcumin, a polyphenolic herbal preparation derived from Curcuma longa, has essential properties to combat several neurodegenerative diseases. Curcumin is a safe, natural and economical compound, but its biomedical potential is limited due to its low solubility in water, incomplete absorption in the intestine, poor bioavailability, rapid metabolism and excretion from the body, as well as its low ability to penetrate the BBB in significant amounts. Moreover, due to its natural origin, curcumin can become part of a nutrition plan and can be administered for a long time without harmful effects. To overcome any inconvenience, various nanoparticle-based curcumin delivery systems have been developed, such as liposomes, micelles, solid lipid nanoparticles, polymer nanoparticles, and inorganic nanocarriers. Nanocarriers can enhance the water solubility of this polyphenolic compound, improve its absorption by cells, and enhance its antioxidant and anti-inflammatory properties. Curcumin can be incorporated into cell membrane-camouflaged nanoparticles, which are biomimetic nanoparticles that combine the unique functionality of cell membranes and the engineering versatility of synthetic nanomaterials to efficiently deliver therapeutic agents. The surface of the nanoparticles can be modified and functionalized using brain-specific ligands to effectively penetrate the BBB to deliver curcumin to specific areas of the brain and neural membranes. Curcumin is regularly found in Indian and Chinese cuisine, and its benefits for human health have been confirmed by pharmacological and clinical studies. In conclusion, given that curcumin is inexpensive and has no side effects, it can be considered as a strong candidate for the role of neuroprotector.

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