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Evaluation of the combination of Naringenin and Thiamine on inflammatory responses in the experimental model of Parkinson's disease

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200 years after James Parkinson's seminal paper on tremor paralysis, most of his clinical studies have been revised and revised. The disease was once known as a movement problem, but it has been proven through various studies that many non-motor activities such as cognitive impairment, autonomic dysfunction, sleep problems, depression and hyposmia (olfactory problem) are among the problems that They are seen in this disease and significantly increase the difficulty of this disease for the patient. The purpose of this study is to investigate the effect of naringenin, a well-known antioxidant, and thiamine, a neuroprotective vitamin, separately and combining them together on Parkinson's disease, which is a neurodegenerative disease. To carry out this study, rats were randomly divided into 5 experimental groups with 6 rats in each group; Thus, the groups include the control group, parkinsonian, treated with naringenin, thiamine and a combination of both. There are various methods and materials to create an experimental model of Parkinson's disease. In this study, 6-hydroxydopamine was used to induce Parkinson's disease. 6-Hydroxydopamine is generally injected unilaterally in the bundle of frontal brain fibers, striatum and sometimes directly into the substantia nigra to induce the disease. Parkinson's severity was assessed by apomorphine-induced turning behavior test, hanging test and rotarod. The effects of the treated groups were also examined using the same tests; The changes in IL-6, IL-1 and TNF- α cytokine levels were investigated to investigate drug effects, as well as TAC, nitric oxide and total protein biochemical tests to investigate antioxidant levels. Then tissue sections were prepared from the midbrain tissue and after staining with H&E, the area was studied microscopically. Data analysis was done by one-way analysis of variance and Tukey's post-test. In these investigations, it was found that the outward movements and communicating with the surrounding environment in rats treated with 6-hydroxydopamine were completely different from the rats in the control group. The involved rats were also very distressed due to their inability to use their hands and decreased

appetite. Clinical tests showed a significant decrease in movement activities and one-way rotation in the apomorphine test, a decrease in the ability to connect from a rod in the Hanging Wire test in the affected group. Laboratory tests indicated a significant increase in the expression level of inflammatory cytokines and active nitrogen mediator. It was accompanied by a significant decrease in total antioxidant capacity in rats with Parkinson's disease. The use of nargenin or thiamine was effective in improving these disorders. More importantly, the combination of these two drugs in half the optimal dose led to better results.