The Influence of the Mediterranean Diet in the Brain Disease

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Background: Traumatic brain injury (TBI) is a major health and socioeconomic problem affecting the world. This condition results from the application of external physical force to the brain which leads to transient or permanent structural and functional impairments. TBI has been shown to be a risk factor for neurodegeneration which can lead to Parkinson's disease (PD) for example.

Objective: In this study, we wanted to explore the development of PD-related pathology in the context of an experimental model of TBI and the potential ability of Coriolus versicolor and Hericium erinaceus to prevent neurodegenerative processes.

Methods: Traumatic brain injury was induced in mice by controlled cortical impact. Behavioral tests were performed at various times: the animals were sacrificed 30 days after the impact and the brain was processed for Western blot and immunohistochemical analyzes.

Results: After the head injury, a significant decrease in the expression of tyrosine hydroxylase and the dopamine transporter in the substantia nigra was observed, as well as significant behavioral alterations that were instead restored following daily oral treatment with Hericium erinaceus and Coriolus versicolor. Furthermore, a strong increase in neuroinflammation and oxidative stress emerged in the vehicle groups. Treatment with Hericium erinaceus and Coriolus versicolor was able to prevent both the neuroinflammatory and oxidative processes typical of PD.

Conclusion: This study suggests that PD-related molecular events may be triggered on TBI and that nutritional fungi such as Hericium erinaceus and Coriolus versicolor may be important in redox stress response mechanisms and neuroprotection, preventing the progression of neurodegenerative diseases such as PD.

Keywords: oxidative stress, neuroinflammation, Traumatic brain injury, Parkinson's disease

Biography:

Roberta Fusco has completed the bachelor degree in chemistry and pharmaceutical technologies at the University of Naples Federico II in 2014. Dr. Roberta Fusco has completed her PhD in Applied Biology and Experimental Medicine in the year 2019 by University of Messina. Additionally, she worked at Yale University School of Medicine and performed postdoctoral studies at University of Messina. She worked as researcher for studies on preclinical pharmacology activities (in vitro primary cultures and in vivo experimental models), for the Epitech Group, biological pharmacology company. Now she is a Researcher at the University of Messina.

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