Anti-Parkinson’s seaweed: Ecklonia cava is a seaweed that may hold the key to Parkinson’s disease prevention. Credit: Osaka Metropolitan University

Parkinson's disease is a neurodegenerative disease caused by the loss of
neurons that produce dopamine, a neurotransmitter involved in motor control and cognitive function. As the global population ages, the number of Parkinson's disease patients is rapidly increasing. Parkinson's disease is induced by neuronal damage due to excessive production of reactive oxygen species.

Suppression of reactive oxygen species generation is essential because it is fatal to dopaminergic neurons that manage dopamine neurotransmitters. Currently, only symptomatic treatment is available, so the development of treatment regimens and prevention methods is necessary.

Associate Professor Akiko Kojima-Yuasa of Osaka Metropolitan University's Graduate School of Human Life and Ecology led a research group that has verified the physiological effect of Ecklonia cava polyphenols, seaweed antioxidants, on the prevention of Parkinson's disease. The study is published in *Nutrients*.

In this study, two types of motor function tests were conducted using Parkinson's disease model mice that were orally fed the antioxidants daily for one week and then administered rotenone. Results showed that motor function, which was decreased by rotenone, was restored. There was also improvement in intestinal motor function and the colon mucosa structure, a special tissue that covers the colon.

Further, cellular experiments using Parkinson's disease model cells verified the biochemical interaction of the preventive effect of Ecklonia cava. Validation results showed that the antioxidants activate the AMPK enzyme (adenosine monophosphate-activated protein kinase), an intracellular energy sensor, and inhibit the production of reactive oxygen species that cause neuronal cell death.

"This study suggests that Ecklonia cava antioxidants may reduce
neuronal damage by AMPK activation and inhibiting intracellular reactive oxygen species production," stated Professor Kojima-Yuasa. "It is hoped that Ecklonia cava will be an effective ingredient in the prevention of Parkinson's disease."

More information: Yuri Yasuda et al, Ecklonia cava Polyphenols Have a Preventive Effect on Parkinson's Disease through the Activation of the Nrf2-ARE Pathway, *Nutrients* (2024). DOI: 10.3390/nu16132076

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