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Astaxanthin protects neuronal cells against oxidative damage and is a potent candidate for brain food.

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Astaxanthin (AST) is a powerful antioxidant that occurs naturally in a wide variety of living organisms. Based on the report claiming that AST could cross the brain-blood barrier, the aim of this study was to investigate the neuroprotective effect of AST by using an oxidative stress-induced neuronal cell damage system. The treatment with DHA hydroperoxide (DHA-OOH) or 6-hydroxydopamine (6-OHDA), either of which is a reactive oxygen species (ROS)-inducing neurotoxin, led to a significant decrease in viable dopaminergic SH-SY5Y cells by the MTT assay, whereas a significant protection was shown when the cells were pretreated with AST. Moreover, 100 nM AST pretreatment significantly inhibited intracellular ROS generation that occurred in either DHA-OOH- or 6-OHDA-treated cells. The neuroprotective effect of AST is suggested to be dependent upon its antioxidant potential and mitochondria protection; therefore, it is strongly suggested that treatment with AST may be effective for oxidative stress-associated neurodegeneration and a potential candidate for natural brain food.

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