Effects of w-3 on Motor Disorders, Cognitive and Oxidative Damages Induced by Haloperidol

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Haloperidol is a typical neuroleptic widely used for treatment of mental disorders, but it produces movement disorders and cognitive impairment. The brain is susceptible to oxidative damage because it contains high levels of membrane lipids and low antioxidant defenses. Omega-3 (ω-3) is an essential fatty acid (EFA) that participates of neuronal membranes, modifies the membrane fluidity and the cell permeability, affecting the brain physiological functions especially the dopamine system. Our aim was investigate the possible benefit of ω-3 supplementation on the orofacial dyskinesia and memory dysfunction haloperidol-induced. Data were analyzed by two-way ANOVA followed by Duncan's test ($p<0,05$). Haloperidol (12mg/kg/week) induced vacuous chewing movements (VCM= 56,3±12,0) and the intake (p.o.) of ω-3 EFA reversed this effect (34,0±19,0). Haloperidol showed impairment in water maze task (22,1±6,7 seconds to find the platform), and this effect was attenuated by ω-3 EFA (13,3±10,5 seconds). Haloperidol increased lipid peroxidation (by TBARS) in striatum and hippocampus (255,3±105,6 ηmol and 345,42±37,05 ηmol MDA/g tissue, respectively), and the supplementation with ω-3 reduced it (107,7±58,4 and 214,76±53,16 ηmol MDA/g tissue, respectively). We suggest that the motor and cognitive impairments haloperidol-induced may be closely related to lipid peroxidation in striatum and hippocampus, respectively, and that ω-3 EFA supplementation may decrease the side effects of neuroleptic treatment.

Keywords: ω-3, haloperidol, lipid peroxidation, memory, orofacial dyskinesia.
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