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Docosahexaenoic acid prevents resistance to antiepileptic drugs in two animal models of drug-resistant epilepsy**Morteza Zende hde, Melika Moezifar, and Mohammad Sayyah**
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Objectives: One-third of epileptic patients are resistant to antiepileptic drugs. Few clinical studies with small sample size indicate that polyunsaturated fatty acids could control drug-resistant epilepsy. We examined the efficacy of acute and chronic administration of docosahexaenoic acid (DHA) in two animal models of drug-resistant epilepsies, i.e. 6-Hz psychomotor seizures in mice and lamotrigine (LTG)- resistant kindled rats.

Methods: Mice received a single injection of DHA (300 μ M, i.c.v.) along with phenytoin (PHT) or LTG (i.p.). Six-Hz electroshock (0.2 milliseconds rectangular pulse width, 3 seconds duration, 44 mA current) was given 15 minutes after DHA, and seizure behaviors were recorded. In LTG-resistant kindled rats, a single dose of DHA (300 μ M, i.c.v.) was administered with LTG, and seizure parameters were measured. In chronic treatment, mice received DHA (0.1 g/day, orally) for 30 days. Then, a single dose of LTG or PHT was administered to mice and 6-Hz-induced seizures were recorded. In rats, DHA (1 μ M, i.c.v.) was administered during kindling development and effect of LTG in DHA-pretreated LTG-resistant kindled rats was verified.

Results: LTG and PHT did not inhibit 6-Hz seizures in mice after single injection of DHA. However, LTG and PHT inhibited 6-Hz seizures in mice that received DHA for 1 month. Acute or chronic administration of DHA to LTG-resistant kindled rats led to the suppression of kindled seizure parameters by LTG.

Discussion: DHA removes the 'inherent resistance' of 6-Hz seizures to PHT and LTG, and prevents the development of pharmacodynamic tolerance to LTG in LTG-resistant kindled rats. DHA might have potential to be used as add-on therapy in patients with refractory epilepsy.

Biography

Morteza zende del has completed his PhD at the age of 25 years from University of Tehran and postdoctoral studies from Monash University, School of Medicine. He is academic member of University of Tehran. He has published more than 40 papers in reputed journals and has been serving as an editorial board member of Neurotransmitter Journal.

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