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# Does short-term dietary Omega-3 fatty acid supplementation influence brain hippocampus gene expression of zinc transporter-3?

**Hafandi Bin Ahmad**
Universiti Putra Malaysia, Malaysia

Dietary omega-3 fatty acids have been recognized to improve brain cognitive function. Deficiency leads to dysfunctional zinc metabolism associated with learning and memory impairment. The objective of this study is to explore the effect of short-term dietary omega-3 fatty acids on hippocampus gene expression at the molecular level in relation to spatial recognition memory in mice. A total of 24 male BALB/c mice were randomly divided into four groups and fed a standard pellet as a control group (CTL, n=6), standard pellet added with 10% (w/w) fish oil (FO, n=6), 10% (w/w) soybean oil (SO, n=6) and 10% (w/w) butter (BT, n=6). After 3 weeks on the treatment diets, spatial-recognition memory was tested on a Y-maze. The hippocampus gene expression was determined using a real-time PCR. The results showed that 3 weeks of dietary omega-3 fatty acid supplementation improved cognitive performance along with the up-regulation of α-synuclein, calmodulin and transthyretin genes expression. In addition, dietary omega-3 fatty acid deficiency increased the level of ZnT3 gene and subsequently reduced cognitive performance in mice. These results indicate that the increased the ZnT3 levels caused by the deficiency of omega-3 fatty acids produced an abnormal zinc metabolism that in turn impaired the brain cognitive performance in mice.

## Biography

Hafandi Bin Ahmad has completed his PhD at the age of 31 years from La Trobe University, Australia. Currently, he is a Senior Lecturer at Faculty of Veterinary Medicine, University Putra Malaysia. His field of expertise is neurobehavioral science and omega-3 fatty acid metabolism. His current research is on dietary omega-3 fatty acid and animal cognitive function. He has published numerous papers in reputed journals and active presenting his research at international level. He is also a member of the British Neuroscience Association and the High Blood Pressure Research Council of Australia. In 2014, he received the Young Scientist International Award in Japanese Association for Laboratory Animal Science (JALAS) Japan and Malaysia Young Academic Award.

hafandiahmadi@yahoo.com

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