

Abstract

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Antinociceptive effects of docosahexaenoic acid against various pain stimuli in mice.

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BACKGROUND: Docosahexaenoic acid (DHA), an omega-3 polyunsaturated fatty acid (n-3 PUFAs), is an essential polyunsaturated fatty acid in the central nervous system, and possesses many physiological functions in neurodegenerative diseases. Previously, there are some reports that n-3 PUFAs contribute to pain relief.

OBJECTIVE: As the antinociceptive effect of DHA alone has not been reported, this study examined the antinociceptive effect of DHA on various pain stimuli.

METHODS: To evaluate the antinociceptive effect of DHA on thermal and chemical nociception, we employed the tail flick test, acetic acid writhing test and formalin test in mice. DHA was orally administrated at 5, 15 and 25 mmol/kg at 30 min before measurement.

RESULTS: DHA administration dose-dependently exerted an antinociceptive effect against thermal and chemical stimulation in comparison to the control olive oil administration. These effects of DHA were abolished when mice were pretreated with naloxone, an opioid receptor antagonist.

CONCLUSIONS: These findings suggest that DHA has opioid receptor-mediated pain control activities, and may provide valuable information towards an advanced therapeutic approach for pain control.

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