Omega-3 fatty acid-derived mediators that control inflammation and tissue homeostasis

Abstract

Omega-3 polyunsaturated fatty acids (PUFAs), including eicosapentaenoic acid, docosapentaenoic acid and docosahexaenoic acid, display a wide range of beneficial effects in humans and animals. Many of the biological functions of PUFAs are mediated via bioactive metabolites produced by fatty acid oxygenases such as cyclooxygenases, lipoxygenases and cytochrome P450 monooxygenases. Liquid chromatography–tandem mass spectrometry-based mediator lipidomics revealed a series of novel bioactive lipid mediators derived from omega-3 PUFAs. Here, we describe recent advances on omega-3 PUFA-derived mediators, mainly focusing on their enzymatic oxygenation pathway, and their biological functions in controlling inflammation and tissue homeostasis.