

Abstract

J Nutr Biochem. 2010 May;21(5):357-63.

N-3 polyunsaturated fatty acids regulate lipid metabolism through several inflammation mediators: mechanisms and implications for obesity prevention.

Tai CC, Ding ST.

Department of Animal Science, National Taiwan University, Taipei, Taiwan.

BACKGROUND: Obesity is a growing problem that threatens the health and welfare of a large proportion of the human population. The n-3 polyunsaturated fatty acids (PUFA) are dietary factors that have potential to facilitate reduction in body fat deposition and improve obesity-induced metabolic syndromes.

DISCUSSION: The n-3 PUFA up-regulate several inflammation molecules including serum amyloid A (SAA), tumor necrosis factor-alpha (TNF-alpha) and interleukin-6 (IL-6) in hepatocytes and adipocytes. Actions of these inflammation mediators resemble those of n-3 PUFA in the modulation of many lipid metabolism-related genes. For instance, they both suppress expressions of perilipin, sterol regulatory element binding protein-1 (SREBP-1) and lipoprotein lipase (LPL) to induce lipolysis and reduce lipogenesis.

CONCLUSION: This review will connect these direct or indirect regulating pathways between n-3 PUFA, inflammation mediators, lipid metabolism-related genes and body fat reduction. A thorough knowledge of these regulatory mechanisms will lead us to better utilization of n-3 PUFA to reduce lipid deposition in the liver and other tissues, therefore presenting an opportunity for developing new strategies to treat obesity.

PMID: 20149625

