

n-3 fatty acids specifically modulate catabolic factors involved in articular cartilage degradation.

[Curtis CL](#), [Hughes CE](#), [Flannery CR](#), [Little CB](#), [Harwood JL](#), [Caterson B](#).

Connective Tissue Biology Laboratories, Cardiff School of Biosciences, Cardiff University, Museum Avenue, Cardiff CF10 3US, United Kingdom.

This study describes specific molecular mechanisms by which supplementation with n-3 fatty acids (i.e. those present in fish oils) can modulate the expression and activity of degradative and inflammatory factors that cause cartilage destruction during arthritis. Our data show that incorporation of n-3 fatty acids (but not other polyunsaturated or saturated fatty acids) into articular cartilage chondrocyte membranes results in a dose-dependent reduction in: (i) the expression and activity of proteoglycan degrading enzymes (aggrecanases) and (ii) the expression of inflammation-inducible cytokines (interleukin (IL)-1alpha and tumor necrosis factor (TNF)-alpha) and cyclooxygenase (COX-2), but not the constitutively expressed cyclooxygenase COX-1. These findings provide evidence that n-3 fatty acid supplementation can specifically affect regulatory mechanisms involved in chondrocyte gene transcription and thus further advocate a beneficial role for dietary fish oil supplementation in alleviation of several of the physiological parameters that cause and propagate arthritic disease.