

Total fat, cholesterol, n-6 and n-3 fatty acid intake in rheumatoid and osteoarthritis patients

DH Volker¹, GAC Major², ML Garg¹

¹Discipline of Nutrition and Dietetics, University of Newcastle, NSW 2308

²Department of Rheumatology, Royal Newcastle Hospital, NSW 2300

N-6 and n-3 polyunsaturated fatty acids (PUFA) play an important role in the modulation of inflammatory responses. Experimental studies have provided evidence that the incorporation of n-3 fatty acids into tissues/cells can modify inflammatory and immune reactions, and implicate n-3 fatty acids as potential therapeutic agents against inflammatory disease.

In this study, total fat and cholesterol content as well as the intake of n-6 and n-3 polyunsaturated fatty acids (PUFA) in the diet of rheumatoid (RA) and osteoarthritis (OA) patients was assessed using a food frequency questionnaire. This quantitative food frequency questionnaire was administered by interview to 52 RA (32 females and 20 males) and 50 OA (38 males and 12 females) patients from the Rheumatology Clinic of the Royal Newcastle Hospital. Food intake was analysed using a modified Diet 1 program for nutrient intake. The mean age, % energy from fat and BMI (kg/M²) for RA females was 59.7 years (14.1), 40.7% and 27.7; for RA males 60.1 years (10.1) 39.6% and 27.1; for OA females 70.5 years (11.2), 38.6% and 30.7 and for OA males 66.4 years (7.2), 37.3% and 28.8 respectively.

n-6 & n-3 Intake Comparison

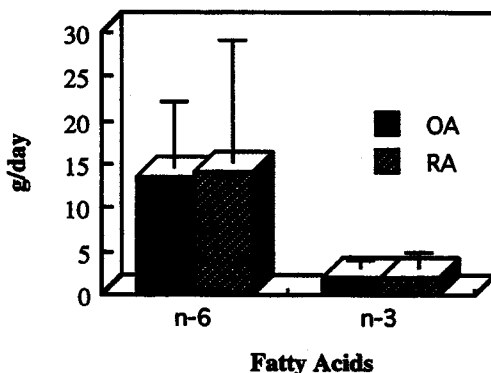


Figure. n-6/n-3 fatty acid intake was similar in both groups with a ratio of 7:1 and n-6 intake range of 2.4-43g/d.

Analysis of the food frequency questionnaires revealed that both rheumatoid and osteoarthritis groups consumed a similar range of nutrients from a conservative and narrow range of core foods with approximately 40% energy derived from fat. Cholesterol, n-6 and n-3 intakes were similar for both groups, with average values of 350 mg/day, 14 g/day and 1.9 g/day respectively. The ratio of n-6/n-3 in both RA and OA patients 7:1, which is close to the Australian recommendations (1). This ratio appears to be due to high intake of canola and olive oils, and a lower intake of safflower, sunflower, soybean and corn oils. There is a range (2.4 - 43.0 g/day) of n-6 PUFA intake which may be of importance in determining the efficacy of n-3 PUFA supplements to achieve anti-inflammatory effects in RA, as n-6 PUFA has been previously shown to inhibit n-3 PUFA incorporation in human subjects (2).

1. Allman M. The n-3 PUFA status of Australians. *Aust J Nutr Diet* 1994; 51:50-1.
2. Cleland LG, James MJ, Neumann MA, D'Angelo M, Gibson RA. Linoleate inhibits EPA incorporation from dietary fish oil supplements in human subjects. *Am J Clin Nutr* 1992;55:395-9.