

New data clarify relationship between diet and disease activity

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Two new studies presented today at the European League Against Rheumatism Annual Congress (EULAR 2014) have helped clarify the relationship between the dietary intake of monounsaturated fatty acids and cholesterol with disease activity in rheumatoid arthritis (RA) and osteoarthritis (OA) respectively.

In the TOMORROW study, daily intake of [monounsaturated fatty acids](#) as a component of the Mediterranean diet has been shown to be an [independent predictor](#) of remission in patients with RA; monounsaturated fatty acids might therefore be suppressing disease activity.¹

In another study, using an experimental animal model of OA, accumulation of LDL-cholesterol resulted in an increase in synovial thickening and ectopic bone formation, with excessive cholesterol levels shifting the balance towards increased cartilage damage.²

Researchers have been exploring the link between diet and different types of arthritis since the 1930's.³ While the relationship between diet and arthritis is certainly complex, these two studies have highlighted the importance of addressing [dietary intake](#) of monounsaturated fatty acids and cholesterol when treating patients with RA and OA respectively.

Dietary intake of monounsaturated fatty acids independently predicts remission in RA Using the RA disease activity score calculator DAS28-ESR to categorise patients as having active disease or being in

remission, dietary intake of monounsaturated fatty acids was shown to be an independent predictor of remission in patients with RA (Odds: 0.51; 95% CI = 0.25 .02, $p = 0.057$). The intake of monounsaturated fatty acids and of Mediterranean diet components was significantly lower in the RA than in the control group ($p = 0.003$).¹

The ratio of monounsaturated fatty acids to saturated fatty acids was significantly lower in patients with RA with high disease activity vs. those patients in remission and those with low disease activity ($p = 0.033, 0.010, 0.047$, respectively).

"We now have a much better understanding of the relationship between disease activity in patients with RA and the Mediterranean diet based on the findings from our 10-year-prospective cohort study TOMORROW," said lead author Mr. Yoshinari Matsumoto of the Department of Medical Nutrition, Graduate School of Human Life Science, Osaka City University, Japan.

A previous study had shown that, by adjusting to a Mediterranean diet, patients with RA could obtain a reduction in inflammatory activity, an increase in physical function, and improved vitality.⁴ However, this is the first time the key elements within a Mediterranean diet involved in these beneficial effects have been assessed.

"Confirming that daily intake of monounsaturated fatty acids, as a component of the Mediterranean diet, is an independent predictor of remission in patients with RA suggests that monounsaturated fatty acids might actually be suppressing disease activity," Mr. Matsumoto concluded.

In this study, data was collected from 208 consecutive patients with RA and 205 age- and gender-matched healthy volunteers. Daily food and nutrient intake status were assessed using a brief, self-administered diet

history questionnaire and Mediterranean diet scores were calculated from reference results from the control group. Cholesterol influences disease activity in OA

To further investigate the link between cholesterol and OA pathology, ApoE deficient mice (a model for extremely high systemic LDL cholesterol levels) received a normal or cholesterol-rich diet for 54 days; wild type mice were used as controls. At day 18, experimental OA was induced by intra-articular injection of collagenase.²

While no differences between the two groups of mice fed a normal diet were found at the early time point of the study (day 28), by day 54 (end-point OA) the ApoE deficient mice showed a strong increase of ectopic bone formation, mainly at the medial collateral ligament (5.4-fold increase; p

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