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# **Oral Tolerance**

## **MECHANISMS AND APPLICATIONS**

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# **Rheumatoid Arthritis and the Drop in Tolerance to Foods**

## **Elimination Diets and the Reestablishment of Tolerance by Low-dose Diluted Food**

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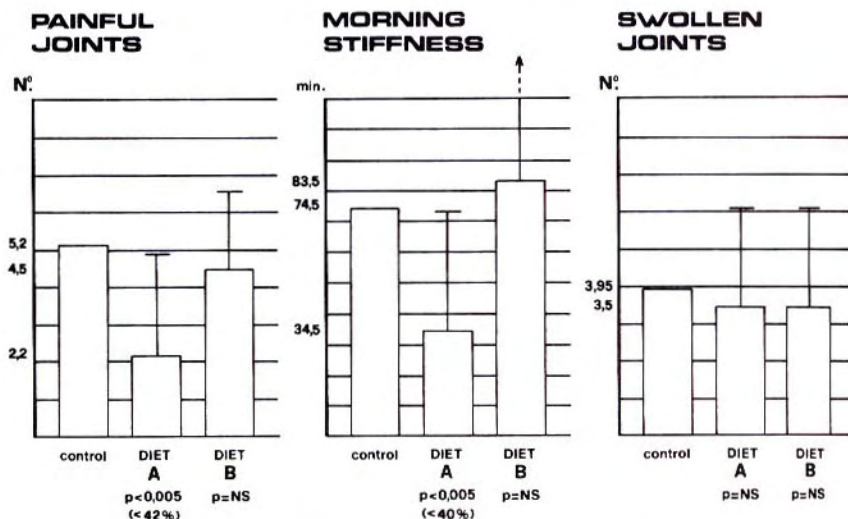
### **INTRODUCTION**

Many studies have recently confirmed the relationship between diet and some pathological features of rheumatoid arthritis (RA). The existence of a food-induced arthritis,<sup>1</sup> the induction of type A synoviocytes that bind exogenous food antigens,<sup>2</sup> has been reported. We tried to determine the effects induced by a dietary approach, reestablishing the usual tolerance to foods, on three pathological features of rheumatoid arthritis (stiffness, pain, and joint swelling). We compared two different diets on the same subject: a well-balanced normocaloric one, and a diet in which patients avoided foods suspected to interfere with their own immune system.

Twelve patients, aged 42 to 69, suffering from stable RA for an average time of 10.1 years, under drug control, entered a crossover study to evaluate the clinical effects of two different normocaloric diets. They underwent a dynamometric challenge test (DRIA test), which allows physicians to detect foods suspected of causing intolerance. Patients were randomly and blindly assigned to diet A (no suspect foods admitted) or B (well-balanced diet) for three months and then crossed over after a one-month washout.

### **THE DRIA TEST**

The test is a dynamometric challenge test, designed to point out in a repeatable way, in standard condition, the interference induced onto muscular strength by contact between the mouth and a liquid preparation of food. An electric strength transducer sends objective electric data to a connected computer that analyzes the variations of strength. The test allows physicians to take notice of foods interfering with the whole body system, and to alert the suspect to a drop in tolerance to specific foods.



**FIGURE 1.** Diet A excluded all foods identified by the DRIA test. Diet B included all kinds of food. After the A diet, patients had 42% less joint pain (CI from -58% to -25%;  $p < 0.005$ ). Results from the B diet were not significant. After the A diet, morning stiffness was reduced by 40% (CI from -66% to -13%;  $p < 0.005$ ). Results from the B diet were not significant. Both diets slightly reduced the number of swollen joints; the results were not significant.

## RESULTS

The results had been statistically analyzed with the two-tailed Wilcoxon test for ranked pairs (Fig. 1). Diet and avoidance of selected foods appear to be useful in RA management, and the DRIA test represents a practical clinical tool for establishing the best diet.<sup>3</sup> A drop in tolerance to foods is strictly individual. The diet for the relief of RA symptoms cannot be a standard one, but should be selected according to individual food hypersensitivities.

More recently, ten people with RA, whose food intolerances were detected with the DRIA test, which included a drop in tolerance to dairy products, underwent a study in which they could eat any amount of the suspect foods twice a week.<sup>4</sup> At the same time, the patients took a 1 mL solution of these foods, daily, in order to reestablish tolerance to those foods.<sup>5</sup> The suitable, strictly individual concentration was defined during the DRIA test. Our attempt was to take advantage of the induction of low-dose tolerance by means of low (but still considerable) dosage of antigens (*e.g.*, 0.25 mg of milk diluted in 1 mL of water), thus creating tolerance towards the responsible antigen, and in some cases, the reestablishment of a correct immune reaction to other antigens causing the symptoms.<sup>6</sup> Preliminary results appear to match those obtained with the elimination diet. Not only is a tolerance-inducing oral treatment suitable for relief of symptoms, but it also allows for better diet compliance.

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