

## A Role for Improved Nutrition in Periodontal Management Strategies?

The first joint symposium between the Periodontal and Nutrition Research Groups of IADR was held in 2002 in San Diego under the title of 'Nutrition and Periodontal Disease – The Modern Era'. It was chaired by Christine Ritchie, an academic physician in geriatric medicine, and attendance was impressive. It became apparent that interest in lifestyle factors as risk indicators for periodontitis, in particular micronutrient intake, was growing rapidly and researchers were gradually starting to revisit nutrition and periodontal inflammation in a more scientific manner than previous studies had been able to achieve. It was revealed for the first time to a dental audience that certain micronutrients had powerful effects upon cell behaviour at the gene transcription level; that the production of pro-inflammatory mediators by epithelial and inflammatory cells, and by fibroblasts and adipocytes, could be up-regulated by glucose and advanced glycation end products via cell-surface receptors and redox-sensitive gene transcription factors; and that antioxidant micronutrients could down-regulate such pro-inflammatory cascades by similarly altering the redox-state of these cells. The old adage 'you are what you eat' appeared to be evolving from an old wives' tale to scientific fact.

There is little doubt that the availability of large public epidemiological databases, such as NHANES databases (National Health and Nutrition Examination Survey of the United States) for interrogation and the development of expertise in statistical modelling to make such interrogations both possible and robust, has helped drive the resurgence in interest in lifestyle as an important contributor to periodontal risk. Association studies between periodontitis and putative risk factors, robustly designed to control for confounding factors, have produced remarkable results, which have, in turn, fuelled new hypotheses and led to the design and execution of mechanistic studies. These have given new insights into causal relationships and thus potential novel therapeutic strategies based upon host modulation. Ray Williams summarised very eloquently and succinctly the paradigm shifts in host-modulation therapy over the last 30 years in a symposium at the EuroPerio 5 Congress in Madrid in June 2006 ... the future is both interesting and exciting. Our North American colleagues are to be congratulated in persuading the US Government to include robust periodontal outcomes in such huge and expensive national surveys; we have failed to achieve this in the UK to date.

We now have an emerging and increasing body of evidence that certain antioxidant micronutrients appear to reduce the relative risk of periodontitis in non-smokers, and in particular in smokers. The relationships between type 2 diabetes and periodontitis, and obesity (and metabolic syndrome) and periodontitis are becoming clearer. Nutritional biochemistry holds the key to unlocking exciting new approaches to periodontal management. However, do not be fooled into believing that dietary supplements hold the key to the future success. Evidence also points to the overriding importance of whole food nutrition, and in particular 'phytonutrients', in improving disease outcomes – rather than 'popping pills'. In the words of Richard E. DuBois, 'Nutrition is the foundation of health and disease prevention' ... happy eating!



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