



Diet, alcohol, sport and periodontal inflammation

There is increasing interest in the role of lifestyle factors in the development and progression of inflammation, including periodontal inflammation, to the extent that the International Association for Dental Research (IADR) meeting in Miami 2009 will present two symposia focusing on such issues. Is this just revisiting old ideas from the 17th to 19th centuries or is there more to it?

The traditional view of the impact of diet on periodontitis was that severe nutritional deficiencies have a negative impact. The classical trials of James Lind on English sailors in the 1740s demonstrated that severe vitamin C deficiency led to scurvy, with physical signs that included gingival bleeding and ulceration. However, things have moved on somewhat and it is now recognised that nutrients are not just important to energy production and to act as cofactors in metabolic processes, but both macro- (e.g. fats, carbohydrates and proteins) and micro-nutrients (e.g. vitamins and minerals) affect cellular behaviour at the molecular level by controlling gene transcription for inflammatory peptides (cytokines). The last decade has seen the birth and growth of the subject of nutrigenomics, and in the future we are likely to see the recommendation of specific diets and lifestyle changes for periodontitis patients based upon their genetic make-up.

Refined carbohydrate (glucose) and saturated fat from modern diets are considered to be bad for our health as they generate oxygen radicals. These radicals create a phenomenon called 'oxidative stress', whereby endogenous antioxidant systems are overwhelmed, and cells and tissues are damaged directly by radicals and indirectly by gene transcription factors that literally 'switch on' inflammation. Natural antioxidants (not mono-vitamin supplements) that are found in deeply coloured fruits and vegetables and polyunsaturated fatty acids (particularly omega-3, found in fish oils) are thought to be beneficial. Unrefined fibre is valuable in slowing down gastric emptying and digestive processes and reducing glucose and triglyceride uptake into blood. Broccoli, spinach and other leafy vegetables as well as grapefruit, kiwi, cherries and pomegranates help reduce inflammation, as do tea, cinnamon, almonds, pistachios and peanuts, when eaten with high carbohydrate meals. Even better news, alcohol can offer health benefits. However, only in light to moderate levels of consumption, as this increases high density lipoprotein levels (good fats). High alcohol levels have negative effects on glucose metabolism. However, one to two drinks immediately before mealtime has cardio-protective effects by reducing postprandial glucose levels.

Finally, regular exercise improves insulin sensitivity and lowers triglyceride and glucose levels with anti-inflammatory benefits. This fascinating field is in its infancy in periodontal research, but watch this space – then go for a run, have a nice aperitif and a glass of red wine with your food, making sure it is leafy green, deep red, with plenty of 'hunter-gatherer' roughage and high-quality dark chocolate for dessert! But remember, the benefits may ultimately depend upon your genotype!

A handwritten signature in black ink, appearing to read 'Iain Chapple'.

Iain L. C. Chapple