Diet change works swiftly in reducing risk

January 14 2013

A study by Lynnette Ferguson, Professor of Nutrition at The University of Auckland, has shown that a change in diet can be effective in reducing inflammation over a period of just six weeks in healthy New Zealanders.

The research has also shown that short-term studies with relatively small numbers of participants are capable of yielding robust research results, which has major implications for the cost of human clinical trials.

"Inflammation," says Professor Ferguson, "can be the catalyst for chronic human diseases, including Alzheimer's, cardiovascular diseases and some cancers, as well as various autoimmune diseases, including rheumatoid arthritis, Crohn's Disease and type 2 diabetes."

"It has been established in many studies that this inflammation can be reduced through a diet which is high in long-chain omega-3 fatty acids, fruit and vegetables, nuts and whole grains, and is low in refined grains, saturated fats and sugars.

"Many of these dietary components characterise the 'Mediterranean diet', which has been shown to protect against chronic disease."

What Professor Ferguson set out to investigate was whether there was evidence of inflammation in apparently healthy New Zealanders and whether changing their diet for just six weeks would reduce this evidence.

To do this she looked at bio-markers including the C-reactive protein (CRP), which is a standard marker for inflammation and can be measured through blood tests.

Thirty healthy volunteers, selected for their initially "poor" diets, were encouraged to cut out refined and processed foods and to follow a Mediterranean-type diet over the six weeks of the study, with increased amounts of fish, vegetables, unrefined cereals and "good" fats such as olive oil and avocado. They were given some foods, including salmon (for one meal a week), and were provided with recipes for healthy eating. The biggest difference from a standard Mediterranean-style diet was the use of gluten-free foods.

Participants, randomly assigned to high and lower-intervention groups, provided blood and urine samples at the beginning and end of the study, completed a four-day diary in the final days, and completed questionnaires about their diet and lifestyle, as well as attending workshops led by expert dieticians.

"This was a small study, intended to be a pilot for a much larger study of patients with Inflammatory Bowel Diseases such as Crohn's Disease, but the results turned out to be highly statistically significant," says Professor Ferguson. "Overall average daily fat intake was considerably reduced, and much lower percentages of saturated fat were consumed."

The self-reporting of volunteers was corroborated by the blood tests, which showed a corresponding reduction in the bio-markers for inflammation. It demonstrated that the high-intervention diet had altered gene expression within six weeks.

"This is a remarkable result," says Professor Ferguson, "since it shows that average people, many of them young and with no health conditions, can, through an improvement in diet, significantly modify the

biomarkers that indicate the risk that they could develop a chronic disease later."

The larger research project for which this was a pilot or "proof of principle" study is one which is examining the effect of a change to a Mediterranean-type diet (similar, though not identical, to that in the pilot study) on people suffering from Inflammatory Bowel Disease.

It has been established that there are several different genotypes characteristic of people suffering from Inflammatory Bowel Disease, and that each of those genotypes responds differently to particular types of diet or dietary items. The current research project is concentrating on those who have the most common genotype for the disease, though the ultimate aim is to formulate different diets tailored to the needs of the whole range of genotypes.

Results are being analysed now and look "highly encouraging", says Professor Ferguson. The findings will be available in March.

Provided by University of Auckland