Prebiotics Could Reduce Artery Hardening, Boost Heart Health

By Stephen Daniells

1/2/2007- Dietary supplementation with the prebiotics inulin and oligofructose reduced the build up of fatty plaques associated with atherosclerosis, reports an animal study from France.

Writing in the *British Journal of Nutrition*, researcher Marie-Hélène Rault-Nania and her colleagues from the Auvergne Human Nutrition Research Centre (UMR1019, INRA) and the Faculty of Medicine and Pharmacy, Besancon, report that mice fed a diet containing long-chain inulin or an oligofructose-enriched inulin had significantly reduced levels of triacylglycerol and atherosclerotic plaque was reduced by about 30 per cent.

Atherosclerosis, or hardening of the arteries, is a major risk factor for cardiovascular disease (CVD), which causes almost 50 per cent of deaths in Europe, and is reported to cost the EU economy about €169bn ($202bn) per year.

The researchers used male apolipoprotein-E-deficient mice, putting the animals at an increased risk of heart disease. Apolipoprotein-E (Apo-E) is essential for the normal breakdown of triglyceride-rich lipoprotein constituents.

Rault-Nania and her colleagues randomly assigned 32 mice to one of four dietary intervention groups: a semi-purified sucrose-based diet (control group), or diets in which sucrose was replaced in part by various inulin-type fructans (10 g/100 g): long-chain inulin (Beneo HP, Orafti), oligofructose (Beneo P95, Orafti), or an oligofructose-enriched inulin (Beneo Synergy1).

After 16 weeks of supplementation, the researchers found that the atherosclerotic plaques in the mice fed the long-chain inulin or an oligofructose-enriched inulin were 35 and 25 per cent lower, respectively, compared with the control group.

It is also reported that the long-chain inulin-fed group had significantly decreased plasma cholesterol concentrations, and all three inulin-type fructans significantly reduced triacylglycerol (TAG) concentrations compared with the control group.

"Both the long-chain inulin and an oligofructose-enriched inulin significantly lowered hepatic cholesterol concentrations compared with the control diet. Hepatic triacylglycerol concentrations were significantly lower in all three groups fed the fructan-supplemented diets versus the control group," wrote the researchers.

"The results of the present study suggest that inhibition of atherosclerotic plaque formation is more potent in the presence of long-chain inulin, either alone or in combination with oligofructose (an oligofructose-enriched inulin), and that this probably is related to changes in lipid metabolism," they concluded.

The study was welcomed by Dr Anne Franck, Orafti's executive vice president of science and technology: *"This exciting new study on atherosclerosis suggests that the proven benefits delivered by inulin and oligofructose extend to heart health. While further research is needed, these results support evidence from clinical trials that inulin and oligofructose can modulate cholesterol and*

triglycerides levels in the blood."

Belgium's Orafti has been influential in building the science behind inulin and oligofructose, backing research into potential benefits for a variety of health conditions ranging from bones to colorectal cancer, from immunity to satiety and weight management.

Source: *British Journal of Nutrition*
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"Inulin attenuates atherosclerosis in apolipoprotein E-deficient mice"
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