Nuts, Dietary Pulses Improve Control in Type 2

BY KATE JOHNSON

MONTREAL — A diet rich in pulses and nuts can improve glycemic control in type 2 diabetes patients to within ranges seen with pharmaceutical intervention, researchers reported at the World Diabetes Congress.

A meta-analysis of 41 trials of pulses, either alone or combined with low glycemic or high fiber diets, noted improved markers of long-term glycemic control (Diabetologia 2009;52:1479-95), reported Dr. John Sievenpiper of St. Michael's Hospital's risk factor modification center, Toronto.

Another study, also conducted by his group, found that 75 g of mixed nuts daily for 3 months improved blood lipids and glycemic control in patients with type 2 diabetes, compared with a mixture of nuts and muffins, or muffins alone. "Whatever your favorite nut or form of nut, it's good to get it into your diet," said Dr. Cyril Kendall of the University of Toronto's department of nutritional sciences.

Both researchers acknowledged long lists of industry relationships: serving on advisory boards for a number of food companies, as well as the International Nut Council, and the Canola and Flax Councils of Canada, and receiving consultant fees from Pulse Canada.

Dietary pulses such as chickpeas, beans, lentils, and peas are characterized by a low glycemic index, high fiber content, high levels of amylose and resistant starches, and vegetable protein, and various other antinutrients "which may act as enzyme inhibitors," said Dr. Sievenpiper. "The effect is to decrease starch digestion and absorption and therefore postprandial glycemia."

His meta-analysis included 11 trials that examined consumption of pulses alone, which noted an overall decrease in standardized mean difference (SMD) of 0.71 in fasting blood glucose (FBG) and 0.62 in serum insulin. Similarly, 19 trials looking at consumption of pulses in low glycemic index (GI) diets noted an SMD decrease of 0.28 in glycosylated blood proteins (GP)—either hemoglobin A_{1c} or fructosamine. And in 11 trials examining pulses in high-fiber diets, there were SMD reductions in fasting blood glucose of 0.32 and in GP of 0.27.

Based on these results, "We would expect about a 0.48% reduction in HbA_{1c}, and this level of benefit approaches that seen with acarbose, exceeds the [Food and Drug Administration] proposed clinically meaningful threshold of 0.3%, and lies at the lower limit of efficacy of what you might expect for oral agents," Dr. Sievenpiper said.

The nut study randomized 117 patients with type 2 diabetes to consume either 75 g nuts, 38 g nuts and 1.5 bran muffins (150 kcal per muffin), or three muffins daily for 3 months. Nut portions included a mix of almonds, cashews, macadamias, pecans, pistachios, walnuts, and peanuts. All treatment portions were equivalent to 475 kcal/day and were designed to maintain rather than decrease body weight.

The primary outcome of the study was change in HbA_{1c} and serum lipids.

The patients' baseline characteristics were similar across the groups. They ranged in age from 61 to 63 years, 75% were male, ethnic backgrounds were diverse, and body mass index ranged from 28.8 to 30.3.

All patients were being treated with oral hypoglycemic medication, and their mean HbA_{1c} level was 7.1%. The mean duration of diabetes was 7-8 years. One hundred patients completed the study, with a similar dropout rate in each group.

An intention-to-treat analysis revealed that HbA_{1c} levels were significantly lower in the nuts-only group, compared with the nut-muffin combination group (6.88% versus 7.02%), although the latter was not significantly lower than the muffin-only group (7.06%), said Dr. Kendall.

There was a significant dose response seen in LDL cholesterol, which fell by 0.19 mmol/L in the full-nut group, compared with full-muffin group.

Previous studies have shown that "nuts are not entirely digested and there's an excretion of about 15%-20% that are simply not absorbed and pass through the gastrointestinal tract," Dr. Kendall said. ■