

## Topic Area: Clinical Research (Including Outcomes of Intervention)

**Abstract Title:** Effect of Nuts on Fatty Acid Concentration and *in vitro* Cancer Cell Growth in Type 2 Diabetes  
Nishi S<sup>1,2</sup>, Kendall CWC<sup>1-3</sup>, Bashyam B<sup>1,2</sup>, Vigouliouk E<sup>1,2</sup>, Jenkins DJA<sup>1,2</sup>.  
<sup>1</sup>University of Toronto, Ontario, <sup>2</sup>St. Michael's Hospital, Ontario, <sup>3</sup>University of Saskatchewan, Saskatchewan.

**Objective:** To determine the effect of tree nuts and peanuts on serum fatty acids and their association with cancer cell proliferation and coronary heart disease (CHD) risk.

**Methods:** A 12 week randomized controlled trial was completed by 100 participants with type 2 diabetes consuming one of 3 isocaloric dietary supplements: 1) full-dose nut (~75 g mixed nuts per day), 2) half-dose nut (~37.5 g nuts + 1.5 muffins), or 3) control (3 muffins). As part of a secondary analysis, CHD, *in vitro* prostate cancer cell (LNCaP) proliferation, used as a marker of cancer risk, and serum fatty acids levels were analyzed using fasting blood obtained at weeks 0 and 12. LNCaP proliferation was assessed using an MTS assay, a colourimetric sensitive assay for the quantification of viable cells, and the fatty acid concentrations in the phospholipid, triacylglycerol, free fatty acid, and cholesteryl ester fractions were analyzed using thin layer and gas chromatography.

**Results:** Nut consumption, full-dose supplementation compared to control, increased oleic acid (P=0.036) and monounsaturated fatty acids (MUFAs, P=0.024) in the phospholipid fraction. This increase in oleic acid and MUFAs observed with nut intake in the phospholipid fraction was associated with decreased CHD risk (r = -0.278, P = 0.006; r = -0.260, P = 0.010, respectively) but not with altered LNCaP cell growth (r=0.008, P=0.941; r=-0.052, P=0.608, respectively).

**Conclusions:** The fatty acids present in nuts do not appear to increase prostate cancer cell growth, but reduced CHD risk. Thus dietary recommendations to include nuts may be beneficial for heart disease risk reduction with no association with cancer risk.

**Significance to the Field of Dietetics:** Results from this study provide dietitians and other health professionals with evidence to inform advice given to individuals with diabetes with regards to nut intake to help reduce their CHD risk.

**Trial Registration:** clinicaltrials.gov Identifier: NCT00410722