Concurrent Session 2

**Vitamin E increases blood pressure in type 2 diabetic subjects, independent of vascular function and oxidative stress**

NC Ward, JM Hodgson, IB Puddey, V Burke, J Wu, MW Clarke, KD Croft

*School of Medicine & Pharmacology, University of Western Australia & Department of Biochemistry, Core Clinical Laboratory, Royal Perth Hospital, Perth, Australia*

**Background** - Oxidative stress is thought to play a role in the development of diabetes, hypertension and endothelial dysfunction. Vitamin E, a major lipid-soluble dietary antioxidant, occurs in a number of structurally related forms. Although many studies have examined α-tocopherol, another major dietary form, γ-tocopherol has largely been overlooked.

**Objective** - To investigate the effect of α-tocopherol and γ-tocopherol supplementation on blood pressure (BP), vascular function and oxidative stress in people with type 2 diabetes.

**Design** - 55 individuals were randomised in a double blind, placebo-controlled trial. Participants received either 500 mg/d α-tocopherol, 500 mg/d mixed tocopherols (60% γ-tocopherol), or placebo, for 6-weeks. At baseline and post-intervention, 24hr ambulatory BP, endothelium dependent and independent vasodilation and plasma and urinary F_2-isoprostanes were measured.

**Outcomes** - Treatment with α-tocopherol significantly increased systolic BP (7.0 ± 0.9 mmHg, *P* <0.0001), diastolic BP (5.3 ± 0.6 mm Hg, *P* <0.0001), pulse pressure (1.79 ± 0.61 mm Hg, *P* <0.005) and heart rate (2.0 ± 0.7 bpm, *P* <0.005) versus placebo. Treatment with γ-tocopherol significantly increased systolic BP (6.8±1.0 mm Hg, *P* <0.0001), diastolic BP (3.6±0.7 mm Hg, *P* <0.0001), pulse pressure (3.20 ± 0.63 mm Hg, *P* <0.0001) and heart rate (1.8±0.7 bpm, *P* <0.01) versus placebo. Treatment with α-tocopherol or γ-tocopherol significantly reduced plasma F_2-isoprostanes versus placebo, but had no effect on urinary F_2-isoprostanes. Endothelium-dependent and independent vasodilation were not significantly altered.

**Conclusion** - Treatment with either α- or γ-tocopherol significantly increases BP, pulse pressure and HR in type 2 diabetes, independent of changes in vascular function or oxidative stress.

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**Iodine status in Dunedin mothers and their breastfed infants**

HM Mulrinen1, SA Skeaff2, EL Ferguson1, P Valeix2

1Department of Human Nutrition, University of Otago, Dunedin, New Zealand
2U557 INSERM, Institut Scientifique et Technique de la Nutrition et de l’Alimentation, Paris, France

**Background** - Iodine needs increase greatly during pregnancy and lactation. Recent evidence, based on low urinary iodine levels, suggests that New Zealand women are not meeting these requirements. The iodine content of breast milk, which depends upon the iodine intake of the lactating mother, is the only source of iodine for the breastfeeding infant. Newborn infants require iodine for normal growth, cognition and hearing acuity, so it is crucial that their iodine intakes are met. To our knowledge, no studies have investigated the levels of iodine in breast milk over the course of lactation.

**Objectives** - Firstly, to determine, over the first six months post-partum, the median urinary iodine concentrations (MUIC) of breast-fed infants and their mothers, and the breast milk iodine concentration of the mothers. Secondly, to assess the efficacy of two levels of iodine supplementation on increasing breast milk iodine concentration in comparison to a placebo.

**Design** - In a six-month, randomised, double-blind controlled intervention trial, conducted from May 2004 to October 2005, lactating mothers (n=109) from Dunedin were given 75 µg iodine/day, 150 µg iodine/day, or a placebo. At one, two, four, eight, 12, 16, 20 and 24 weeks post-partum, breast milk iodine concentration and maternal and infant urinary iodine concentration were measured.

**Outcomes** - The mothers in this study were predominantly Caucasian (92%) with a mean (± SD) age of 32 years (± 4.8). The average birth weight (± SD) of their infants was 3.7 kg (± 0.5). Preliminary analyses showed that the MUIC of a sub-sample (n=57) of this study population was 43 µg/L (inter-quartile range=23,62) prior to giving birth, which is indicative of moderate iodine deficiency.

**Conclusions** - This suggests that both infants and mothers will be at risk of sub-optimal iodine status in the placebo group. The impact of moderate maternal iodine deficiency on breast milk iodine levels and infant iodine status over a six month period of breastfeeding, in comparison to two different levels of supplementation, will be reported at the conference.