**Cinnamon polyphenols and diabetes**

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**Introduction:**

From many reports it is clear that diabetes mellitus will be one of the major diseases in the coming years. As a result there is a rapidly increasing interest in searching new medicines, or even better searching prophylactic methods. Based on a large number of chemical and pharmacological research work, numerous bioactive compounds have been found in functional herbal food ingredients for diabetes [Anderson and Polansky, 2002]. Cinnamon seems to be highly bioactive, appearing to mimic the effect of insulin through increased glucose uptake in adipocytes and skeletal muscles. Cinnamon polyphenols potentiate insulin-regulated glucose utilization via enhancing insulin signaltransduction pathways [Qin et al., 2003].

**Materials and methods, experimental design, other methodological information:**

Comparative experiments and studies to examine the effect of cinnamon extract comprise animal models (db/db mouse) [Kim et al., 2006] as well as in vitro tests [Cao et al., 2007]. The db/db mouse is a model of obesity, diabetes, and dyslipidemia wherein leptin receptor activity is deficient. Immunoblotting was used to detect protein (proteomics) and mRNA levels (transcriptomics) of insulin receptor (IR), glucose transporter 4 (GLUT4), and tristetraprolin (TTP) in mouse adipocytes. Quantitative real-time PCR was used to quantify and to detect TTP as the reaction progresses in real time. Cinnamon extract rapidly increase TTP mRNA levels by approximately 6-fold in the adipocytes and exert anti-inflammatory effect [Cao et al., 2007].

**Results and discussion:**

A randomised controlled trial conducted with a total of 60 people (30 men and 30 women) with type II diabetes results in reduced mean fasting serum glucose (18-29%), triglyceride (23-30%), LDL cholesterol (7-27%), and total cholesterol (12-26%) levels, but no significant changes were noted in the placebo groups. It was found that blood glucose concentration is significantly decreased in a dose-dependent manner [Khan et al., 2003]. Another study points out, that cinnamon supplementation (1.5 g/d) does not improve whole-body insulin sensitivity or oral glucose tolerance and does not modulate blood lipid profile in a total of 25 postmenopausal patients with type 2 diabetes [Vanschoonbeek et al., 2006]. Analysis of the insulin receptor demonstrated that the receptor was phosphorylated upon exposure to the MHCP (methylhydroxychalcone polymer). This supports that the insulin cascade was triggered by MHCP [Jarvill-Taylor et al., 2001].

**Conclusion:**

Recent systematic review and meta analysis show a beneficial effect on glycaemic control (both HbA1c and Fasting plasma glucose) and the short term (<4 months) effects of the use of cinnamon [Akilen et al., 2012]. These results suggest that cinnamon extract has a regulatory role in blood glucose level and lipids and it may also exert a blood glucose-suppressing effect by improving insulin sensitivity or slowing absorption of carbohydrates in the small intestine.
References:


