Abstract

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Efficacy and safety of 'true' cinnamon (Cinnamomum zeylanicum) as a pharmaceutical agent in diabetes: a systematic review and meta-analysis.

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Abstract

AIMS: Diabetes is a leading cause of morbidity and mortality worldwide. Studies have frequently looked at dietary components beneficial in treatment and prevention. We aim to systematically evaluate the literature on the safety and efficacy of Cinnamomum zeylanicum on diabetes.

METHODS: A comprehensive search of the literature was conducted in the following databases; PubMed, Web of Science, Biological Abstracts, SciVerse Scopus, SciVerse ScienceDierect, CINAHL and The Cochrane Library. A meta-analysis of studies examining the effect of C. zeylanicum extracts on clinical and biochemical parameters was conducted. Data were analysed using RevMan v5.1.2.

RESULTS: The literature search identified 16 studies on C. zeylanicum (five in-vitro, six in-vivo and five in-vivo/in-vitro). However, there were no human studies. In-vitro C. zeylanicum demonstrated a potential for reducing post-prandial intestinal glucose absorption by inhibiting pancreatic α-amylase and α-glucosidase, stimulating cellular glucose uptake by membrane translocation of glucose transporter-4, stimulating glucose metabolism and glycogen synthesis, inhibiting gluconeogenesis and stimulating insulin release and potentiating insulin receptor activity. The beneficial effects of C. zeylanicum in animals include attenuation of diabetes associated weight loss, reduction of fasting blood glucose, LDL and HbA(1c) , increasing HDL cholesterol and increasing circulating insulin levels. Cinnamomum zeylanicum also significantly improved metabolic derangements associated with insulin resistance. It also showed beneficial effects against diabetic neuropathy and nephropathy, with no significant toxic effects on liver and kidney and a significantly high therapeutic window.

CONCLUSION: Cinnamomum zeylanicum demonstrates numerous beneficial effects both in vitro and in vivo as a potential therapeutic agent for diabetes. However, further randomized clinical trials are required to establish therapeutic safety and efficacy.