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[Intervention Review]

Cinnamon for diabetes mellitus

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ABSTRACT

Background

Diabetes mellitus is a chronic metabolic disorder that is associated with an increased risk of cardiovascular disease, retinopathy, nephropathy, neuropathy, sexual dysfunction and periodontal disease. Improvements in glycaemic control may help to reduce the risk of these complications. Several animal studies show that cinnamon may be effective in improving glycaemic control. While these effects have been explored in humans also, findings from these studies have not yet been systematically reviewed.

Objectives

To evaluate the effects of cinnamon in patients with diabetes mellitus.

Search methods

Pertinent randomised controlled trials were identified through AARP Ageline, AMED, AMI, BioMed Central gateway, CAM on PubMed, CINAHL, Dissertations Abstracts International, EMBASE, Health Source Nursing/Academic edition, International Pharmaceutical Abstracts, MEDLINE, Natural medicines comprehensive database, *The Cochrane Library* and TRIP database. Clinical trial registers and the reference lists of included trials were searched also (all up to January 2012). Content experts and manufacturers of cinnamon extracts were also contacted.

Selection criteria

All randomised controlled trials comparing the effects of orally administered monopreparations of cinnamon (*Cinnamomum* spp.) to placebo, active medication or no treatment in persons with either type 1 or type 2 diabetes mellitus.

Data collection and analysis

Two review authors independently selected trials, assessed risk of bias and trial quality, and extracted data. We contacted study authors for missing information.

Main results

Ten prospective, parallel-group design, randomised controlled trials, involving a total of 577 participants with type 1 and type 2 diabetes mellitus, were identified. Risk of bias was high or unclear in all but two trials, which were assessed as having moderate risk of bias. Risk of bias in some domains was high in 50% of trials. Oral monopreparations of cinnamon (predominantly *Cinnamomum cassia*) were administered at a mean dose of 2 g daily, for a period ranging from 4 to 16 weeks. The effect of cinnamon on fasting blood glucose level was inconclusive. No statistically significant difference in glycosylated haemoglobin A1c (HbA1c), serum insulin or postprandial glucose was found between cinnamon and control groups. There were insufficient data to pool results for insulin sensitivity. No trials reported health-related quality of life, morbidity, mortality or costs. Adverse reactions to oral cinnamon were infrequent and generally mild in nature.

Authors' conclusions

There is insufficient evidence to support the use of cinnamon for type 1 or type 2 diabetes mellitus. Further trials, which address the issues of allocation concealment and blinding, are now required. The inclusion of other important endpoints, such as health-related quality of life, diabetes complications and costs, is also needed.

PLAIN LANGUAGE SUMMARY

Cinnamon for diabetes mellitus

Diabetes mellitus is a chronic metabolic disorder. People with diabetes are known to be at greater risk of cardiovascular disease (including heart attack, stroke, and peripheral vascular disease such as acute or chronic ischaemia of a leg resulting in severe pain when walking short distances). There is also an increased risk of eye disease, kidney failure, nerve damage and sexual dysfunction when compared to the general population. Improvements in the regulation of blood sugar levels may help to reduce the risk of these complications.

Cinnamon bark has been shown in a number of animal studies to improve blood sugar levels, though its effect in humans is not too clear. Hence, the review authors set out to determine the effect of oral cinnamon extract on blood sugar and other outcomes. The authors identified 10 randomised controlled trials, which involved 577 participants with diabetes mellitus. Cinnamon was administered in tablet or capsule form, at a mean dose of 2 g daily, for four to 16 weeks. Generally, studies were not well conducted and lacked in quality.

The review authors found cinnamon to be no more effective than placebo, another active medication or no treatment in reducing glucose levels and glycosylated haemoglobin A1c (HbA1c), a long-term measurement of glucose control. None of the trials looked at health-related quality of life, morbidity, death from any cause or costs. Adverse reactions to cinnamon treatment were generally mild and infrequent.

Further trials investigating long-term benefits and risks of the use of cinnamon for diabetes mellitus are required. Rigorous study design, quality reporting of study methods, and consideration of important outcomes such as health-related quality of life and diabetes complications, are key areas in need of attention.