

Title: Can Spices be Used to Help Control Hyperglycemia in Individuals with Type 2 Diabetes?

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Objectives: This systematic review and meta-analysis examined the effect of common spices such as cardamom, ginger, cumin, curcuminoids and cinnamon on improving glucose homeostasis in individuals with type 2 diabetes.

Designs, Methods and Instruments: PubMed, FSTA, Web of Science, CINAHEL, MEDLINE and Cochrane Library database of systematic review databases were searched using keywords (fasting blood glucose OR hemoglobin A1c OR HbA1c OR homeostasis) AND (Ginger or zingiber or "zingiber officinale" or "cinnamomum zeylanicum" or "cinnamomum aromaticum" or "cinnamomum cassia" or "cinnamomum verum" or curcumin or turmeric or curcuminoids or "curcuma longa" or langas or "curcuma zedoarias" or turmeric) AND (diabetes* OR "diabetes mellitus" OR "type 2" OR "blood glucose" OR insulin* OR antidiabet* OR "glucose level") up to January 2020. All statistical calculations were performed using SAS software version 9.2 (SAS, Cary NC, USA). P-values less than 0.05 were considered significant, and p-values less than 0.10 were considered weakly significant.

Results: Twenty-three studies with 2237 trial participants were selected out of a 512 study pool. Spices decreased FBG and HbA1c %. The estimated reduction in intervention change vs. control change is as follows: A1c was -0.264 mg/dl, 95% CI (-0.5503 , -0.02), *P* value 0.069; FBG was -9.9370 mg/dl, 95% CI (-20.79 , 0.91), *P* value 0.07. A significant heterogeneity was observed overall among the all studies, indicating that not all studies had similar levels of decrease.

Conclusions: A correlation between the consumption of certain common spices and a significant reduction in glycemic indices among diabetes patients was proven.

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