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Concurrent Effects of Garlic (Allium sativum) Supplementation on Blood Pressure and Glycemic Control in Patients with Hypertension and Type 2 Diabetes: A Systematic Review and Meta-Analysis

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Toktam Soleimani[1], Asma asadian*[2]

1.9Dey Educational Hospital, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

2.9Dey Educational Hospital, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

Backgrounds

The comorbidity of type 2 diabetes and hypertension exacerbates the risk of cardiovascular events. This systematic review and meta-analysis aimed to evaluate clinical evidence on the concurrent efficacy of garlic supplementation on glycemic and hemodynamic control in these patients.

Findings

Among 18 eligible clinical trials (1,250 patients), garlic extract or powder supplementation (600–2,400 mg/day) was associated with significant reductions in SBP (weighted mean difference: −8.3 mmHg) and DBP (−5.1 mmHg). Significant reductions in FBS (−14.5 mg/dL) and HbA1c (−0.6%) were also observed compared to placebo. No serious adverse events were reported.

Conclusion

Moderate-certainty evidence indicates that garlic, as a safe adjunctive therapy, can concurrently improve blood pressure and glycemic control in cardiometabolic patients; however, larger clinical trials with longer follow-up periods are recommended.

Methods

A systematic search was conducted in PubMed, Scopus, Web of Science, and Cochrane Library up to the end of 2024 according to PRISMA guidelines. The search strategy combined MeSH terms including "Garlic," "Diabetes Mellitus, Type 2," "Hypertension," "Blood Glucose," and "Glycated Hemoglobin" using Boolean operators. Inclusion criteria were: (1) randomized controlled trials (RCTs); (2) patients with type 2 diabetes and hypertension; (3) garlic supplementation intervention; (4) reporting of SBP, DBP, FBS, or HbA1c outcomes. Exclusion criteria were: non-trial studies, review articles, conference abstracts, and studies without control groups. Quality was assessed using the Cochrane RoB 2 tool.

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