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REVIEW ARTICLE

Effects of propolis supplementation on glycemic status, lipid profiles, inflammation and oxidative stress, liver enzymes, and body weight: a systematic review and meta-analysis of randomized controlled clinical trials

Jamal Hallajzadeh[1] · Alireza Milajerdi[2] · Elaheh Amirani[2] · Vahideh Ebrahimzadeh Attari[3] · Hossein Maghsoudi[4] · Seyyed Mehdi Mirhashemi[5]

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Abstract

The aim of meta-analysis was to assess the effects of propolis on markers of oxidative stress, lipid profiles, inflammation and glycemic control, liver enzymes, and weight control. The heterogeneity between the included studies was indicated using the Cochrane's Q test and I-square (I^2) statistic. 14 trials were included in this meta-analysis. Our meta-analysis indicated a significant reduction in fating glucose (WMD: -17.00; 95% CI: −30.88, −3.11), HbA1C (WMD: -0.42; 95% CI: −0.75, −0.10), and insulin (WMD: -1.75; 95% CI: −3.24, −0.26) and a marginally significant reduction in insulin resistance (WMD: -0.60; 95% CI: −1.20, 0.00) following propolis supplementation in 10, 8, 6, and 5 studies, respectively. Pooling 5 effect sizes, a significant reduction was seen in ALT (WMD: -5.63; 95% CI: −10.59, −0.67) and aspartate aminotransferase (AST) (WMD: -3.09; 95% CI: −5.15, −1.03) following propolis. A significant beneficial effect was observed for CRP (WMD: -1.11; 95% CI: −1.92, −0.29), TNF-α (WMD: -6.71; 95% CI: −9.44, −3.98) and interleukin-6 (IL-6) (WMD: -17.99; 95% CI: −35.56, −0.42) concentrations after propolis supplementation. This study demonstrated the beneficial effects of propolis on FPG, HbA1c, insulin, CRP, TNF-α and liver enzymes levels.

Keywords Propolis · LDL-cholesterol · Insulin resistance · HDL-cholesterol · Oxidative stress · Meta-analysis

Abbreviations

LDL	Low Density Lipoprotein
AST	Aspartate Aminotransferase
FPG	Fasting Plasma Glucose
BMI	Body Mass Index
HbA1C	Hemoglobin A1C
IR	Insulin Resistance
TG	Triglyceride
TC	Total Cholesterol
ALT	Alanine Aminotransferase

✉ Seyyed Mehdi Mirhashemi
mirhashemismm@gmail.com

Jamal Hallajzadeh
jamal.hallaj@yahoo.com

Alireza Milajerdi
amkhv@yahoo.com

Elaheh Amirani
e.amirani74@gmail.com

Vahideh Ebrahimzadeh Attari
ebrahimzadeh.va@gmail.com

Hossein Maghsoudi
Hosseinm2002@gmail.com

[1] Department of Biochemistry and Nutrition, Research Center for Evidence-Based Health Management, Maragheh University of Medical Sciences, Maragheh, Iran

[2] Research Center for Biochemistry & Nutrition in Metabolic Diseases, Institute for Basic Sciences, Kashan University of Medical Sciences, Kashan, Iran

[3] Department of Nutrition, Maragheh University of Medical Sciences, Maragheh, Iran

[4] Department of Biology, Payame Noor University (PNU) Tehran, Tehran, Iran

[5] Metabolic Diseases Research Center, Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran

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