

# INPLASY

## Does hesperidin supplementation improve metabolic syndrome? A systematic review and meta-analysis of randomized controlled trials

INPLASY202420117

doi: 10.37766/inplasy2024.2.0117

Received: 29 February 2024

Published: 29 February 2024

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### ADMINISTRATIVE INFORMATION

**Support** - R&D Program of Beijing Municipal Education Commission.

**Review Stage at time of this submission** - The review has not yet started.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202420117

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 February 2024 and was last updated on 29 February 2024.

### INTRODUCTION

**Review question / Objective** To evaluate whether hesperidin supplementation alleviates metabolic syndrome.

**Condition being studied** Effects of hesperidin supplementation on adults with metabolic syndrome.

### METHODS

**Participant or population** Adults with metabolic syndrome.

**Intervention** Hesperidin supplementation.

**Comparator** Control group without hesperidin supplementation.

**Study designs to be included** Randomized controlled trials.

**Eligibility criteria** Randomized controlled trials to investigate the effects of hesperidin supplementation on adults with metabolic syndrome.

**Information sources** Systematic literature search will be conducted in Cochrane Central Registry of Controlled Trials (CENTRAL), PubMed, Web of Science, and Science Direct Online (SDOL).

**Main outcome(s)** Plasma lipids, inflammatory factors, blood pressure, glucose homeostasis.

**Quality assessment / Risk of bias analysis** Two researchers who have been trained in literature quality evaluation will carry out literature searching, screening, quality evaluation, and data extraction.

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If any differences arise, they will be resolved through rechecking or discussion or consultation with relevant experts. The Risk of Bias tool 2 (RoB 2) from the Cochrane Collaboration will be used to assess the risk of bias of the randomized controlled studies included in this systematic review and meta-analysis.

**Strategy of data synthesis** The standardized mean difference (SMD) will be used to compare the continuous variables when different methods are used to evaluate the same outcome, whereas mean difference (MD) will be used when the same method is used. The SMD or MD of each outcome will be calculated using a random-effects model. The potential existence of publication bias will be determined by the Egger's test, with visual inspection of the distributions of the effect size on the funnel plot. All statistical results with P value < 0.05 will be considered statistically significant.

**Subgroup analysis** To evaluate the effects of hesperidin supplementation on different outcomes in adults with metabolic syndrome.

**Sensitivity analysis** Sensitivity analysis will be performed to evaluate the influence of each study on the overall effect by eliminating them individually.

**Country(ies) involved** China.

**Keywords** Hesperidin, metabolic syndrome, RCTs, systematic review, meta-analysis.

#### **Contributions of each author**

Author 1 - Lu Li.

Author 2 - Kexin Ji.

Author 3 - Fengqi Du.

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