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INPLASY

Taurine for the Risk of Metabolic Syndrome: a Protocol of a Systematic Review and Meta-analysis

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ADMINISTRATIVE INFORMATION

Support - TSUM.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 December 2023 and was last updated on 20 December 2023.

INTRODUCTION

Review question / Objective The objective of this study is to investigate the treatment effect taurine on Metabolic syndrome (MetS) related parameters.

Rationale Taurine, a sulfur containing amino acid, has been shown promise in influencing key metabolic parameters linked to MetS, such as lipid metabolism, glycemic markers, and inflammation. However, findings from various clinical trials have been inconsistent. In this meta-analysis of randomized controlled trials, we systematically investigated the impact of taurine on MetS-related parameters.

Condition being studied The PICO (population, intervention, comparison, outcome) setting for this meta-analysis includes: (1) P: human participants, (2) I: taurine supplementation, (3) C: supplementation (including placebo) other than taurine, and (4) O: parameters associated with the diagnosis of MetS.

METHODS

Search strategy Two authors will conduct independent electronic searches in PubMed, Cochrane Library, and ClinicalTrials.gov using the keywords ('taurine' OR 'taufon') AND ('metabolic syndrome' OR 'diabetes mellitus' OR 'obesity' OR 'hypertension' OR 'dyslipidemia' OR 'hyperglycemia').

Participant or population Human participants.

Intervention Taurine supplementation.

Comparator Supplementation (including placebo) other than taurine.

Study designs to be included Randomized controlled trials.

Eligibility criteria (1) RCTs incorporating pure taurine and its compounds as the treatment arm; (2) inclusion of a comparative arm utilizing interventions other than taurine; and (3) trials providing available data for pre- and post-intervention assessments or evaluations of changes in one or more of the recorded outcomes, (4) at least one reference group using treatments not including taurine.

Information sources Two authors will conduct independent electronic searches in PubMed, Cochrane Library, and ClinicalTrials.gov using the keywords ('taurine' OR 'taufon') AND ('metabolic syndrome' OR 'diabetes mellitus' OR 'obesity' OR 'hypertension' OR 'dyslipidemia' OR 'hyperglycemia').

Main outcome(s) The primary outcome is Systolic blood pressure (SBP), diastolic blood pressure (DBP), fasting blood glucose (FBG), triglyceride (TG), and high-density lipoprotein Cholesterol (HDL-C). The secondary outcome is (1) body weight (BW) and body mass index (BMI), (2) total cholesterol (TC) and low-density lipoprotein cholesterol (LDL-C), (3) glycemic profiles including glycated hemoglobin (HbA1c), homeostatic model assessment (HOMA), and fasting insulin, and (4) adverse effects.

Data management Two independent authors will extract data from the recruited studies, including demographic data, study design, details of pain neuroscience education and control regimens, and outcome values. The evaluators paid special attention to the effect direction of the scale used in each trial to avoid mis-interpretation.

Quality assessment / Risk of bias analysis To investigate the methodological quality of the included studies, we used the Cochrane risk of bias tool for randomized trials (version 2, RoB 2, London, United Kingdom), which composes six major items for evaluating study quality: the randomization process, intervention adherence, missing outcome data, outcome measurement, selective reporting, and the overall risk of bias.

Strategy of data synthesis A random-effects model will be used to pool the effect size on Comprehensive Meta-Analysis software (version 3, Biostat, Englewood, NJ, United States). A two-tailed p-value of less than 0.05 will be considered statistically significant. The weighted mean difference (WMD) will be used to quantify the study outcomes. The I2 and Cochran's Q statistics will be employed to evaluate the degree of heterogeneity across trials.

Subgroup analysis Not applicable.

Sensitivity analysis To confirm the robustness of the meta-analysis, the sensitivity analyses were performed using one-study removal method to see if there was a significant change in the summary effect size after removing a particular trial from the analysis.

Language restriction No limitation of languages.

Country(ies) involved Taiwan.

Keywords Taurine, metabolic syndrome, lipid profile, glycemic status.

Contributions of each author

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