

INPLASY

Sulforaphane improves cognitive dysfunction in the brain: A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

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 27 October 2024 and was last updated on 27 October 2024.

INTRODUCTION

Review question / Objective Whether sulforaphane can improve brain cognitive function.

Condition being studied Sulforaphane is a sulfur-containing compound, also known as isothiocyanate, which widely exists in cruciferous plants. In addition to its potent antioxidant and anti-cancer properties, sulforaphane has been found in some studies to have a beneficial impact on cognitive function and to partially alleviate cognitive impairment.

METHODS

Search strategy This study was conducted according to the guidelines of the preferred report project (PRISMA) of systematic review and meta-analysis. PubMed, Web of Science, Google Academic, Zhiwang and Wanfang databases were selected as document retrieval databases, and the

keywords "sulforaphane", "improvement", "cognitive impairment" and "neurodegenerative diseases" were used as search words.

Participant or population The people cognitive impairment of the brain and able-bodied person.

Intervention Sulforaphane.

Comparator Not intake sulforaphane.

Study designs to be included The subjects included human, animal and cell experiments, and the dose, duration and frequency of intervention were not limited.

Eligibility criteria Not primary diagnosis incomplete result will be removed. The included data was the average \pm standard deviation model, and the result data that can not be used is transformed by software.

Information sources HowNet、PubMed、Web of science、Google Academic.

Main outcome(s) A total of 18 articles were included, Research objects include people and animals. The results showed that the improvement rate of sulforaphane intake on cognitive impairment was statistically significant in human (RR = 3.54, 95% CI = {0.57 - 6.60}, P = 0.02) and mouse experiments (RR = 5.43, 95% CI = {2.70 - 8.16}, P = 0.004). Thus, Sulforaphane can improve cognitive impairment.

Quality assessment / Risk of bias analysis Two reviewers used Cochrane to assess the bias risk of studies based on random sequence generation, assignment hiding, blindness of subjects and personnel, blindness of outcome assessment, incomplete outcome data, selective reporting, and so on. Then used Review manager to make a bias risk table.

Strategy of data synthesis The units of all evaluation indicators were standardized, and we used the average and standard deviation (SD) values of the markers to investigate the effect of the collected data. For the study with only standard error (SE), the square root of the sample size was used to convert SE into SD. For the data going in and out of the present variance and P value, Revman calculate was used for data conversion. The transformed data were analyzed by the review manager.

Subgroup analysis After subgroup analysis, RR= 2.48, 95%CI = {2.30-2.666}, P=0.92, and I²=0%. The differences between the groupings are minimal, and the experimental results are statistically significant.

Sensitivity analysis None.

Country(ies) involved China.

Keywords sulforaphane; cognitive impairment; improvement; neurodegenerative disease.

Contributions of each author

Author 1 - Sun, XW.

Author 2 - Guo, CH.

Author 3 - Zhu, Y.