INPLASY

The Efficacy of Acupuncture for Cancer Treatment in Animal Models via Immunomodulation: A Systematic Review and Meta-analysis.

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ADMINISTRATIVE INFORMATION

Support - No.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202590115

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 September 2025 and was last updated on 28 September 2025.

INTRODUCTION

Review question / Objective Compared with the use of merely control therapy, does acupuncture therapy enhance the anti-tumor effect in tumor model animals through the immune mechanism?

Condition being studied Inflammatory factors, tumor volume.

METHODS

Search strategy Relevant Chinese and English studies published from inception to September 1,2025 were searched in
nine databases: PubMed, EMBASE, Cochrane Library, Web of Science, ScienceDirect, China National Knowledge Infrastructure (CNKI), Wanfang Data, Chinese Scientific and Technological Journal Database (VIP), and the Chinese Biomedical Literature Database (CBM). Other potentially relevant studies were identified by manually searching the reference lists of the obtained studies. The keywords in the
English database were " acupuncture", " tumor"" cancer","animals".

Participant or population Tumor animal model.

Intervention Acupuncture treatment.

Comparator
Inclusion criteria:
vehicle-treated control animals
Exclusion criteria:
all other control conditions.

Study designs to be included Controlled studies with a separate control group.

Eligibility criteria (1) Rat or mouse models of tumor; (2) animal models of tumor; without strain, sex and age restrictions that were successfully established in different ways; (3) for the

intervention, Acupuncture or electroacupuncture were used.

Information sources Databases, including PubMed, EMBASE, Cochrane Library, Web of Science, Wang Fang, China National Knowledge Infrastructure (CNKI), China Science and Technological Journal Database (VIP) and Chinese Biomedical Literature Database (CBM).

Main outcome(s) Tumor volume, tumor weight, inflammatory factors, percentage of immune cells.

Quality assessment / Risk of bias analysis Methodological quality was assessed using the SYRCLE risk of bias tool.The RoBT can assess deviations in the following 10 areas: (1) sequence generation, (2) baseline characteristics, (3) allocation concealment, (4) random housing, (5) blinding of caregivers and investigators, (6) random outcome assessment, (7) blinding of outcome assessment, (8) incomplete outcome data, (9) selective outcome reporting, and (10) other sources of bias. Two researchers negotiated to resolve the dispute over the assessment and, when necessary, a third researcher (HL) was contacted for arbitration.

Strategy of data synthesis Data analysis was performed using R 4.3 software. All outcomes were treated as continuous variables. When studies reported outcomes using different measures or units, the standardized mean difference (SMD) was used as the effect size index. When studies reported outcomes using same measures or units, mean difference (MD) was used as the effect size index. Confidence intervals (CIs) were set at 95%, and a p-value less than 0.05 was considered statistically significant. Heterogeneity was assessed using the Q-test and the I^2 statistic. If $I^2 \leq 50\%$, a common effect model was used, otherwise a random effect model was utilized. Sensitivity analyses were performed to assess the stability and reliability of the results.

Subgroup analysis Subgroup analysis was conducted based on the type of tumor.

Sensitivity analysis To test the robustness of our findings when selecting the time point of greatest efficacy we will re-run the analysis with data from the latest possible timepoint.

Language restriction English, Chinese.

Country(ies) involved China.

Keywords acupuncture, tumor,cancer, Anti-Inflammatory , Meta-Analysis.

Contributions of each author

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