

Phytochemical Profiling and Biological Activities of Quercus sp. Galls (Oak Galls): Systematic Review of Studies Published in the Last 5 Years

INPLASY2023100012

doi: 10.37766/inplasy2023.10.0012

Received: 04 October 2023

Published: 04 October 2023

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ADMINISTRATIVE INFORMATION**Support** - UMF Iuliu Hatieganu - partial refund of the publication fee.**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY2023100012**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 October 2023 and was last updated on 04 October 2023.**INTRODUCTION**

Review question / Objective What are the biological activities shown by the bioactive metabolites of Quercus sp. galls in the in vitro and in vivo analyzes of the last 5 years?

Condition being studied In vitro antioxidant capacity, anti-inflammatory effects, antibacterial, antifungal, antimalarial and antitumor activity of oak gall extracts.

In vivo antioxidant and anti-inflammatory capacity, anticarcinogenic potential, and hypoglycemic potential of Quercus sp. gall extracts.

METHODS

Search strategy Medical Subject Headings for PubMed: ("quercus"[MeSH Terms] OR "quercus"[All Fields] OR "oak"[All Fields] OR

"quercus infectoria"[All Fields] OR "quercus brantii"[All Fields]) AND ("gall"[All Fields] OR "galls"[All Fields] OR "oak gall"[All Fields] OR "gallnuts"[All Fields] OR "nutgall"[All Fields]), and Emtree for Embase: ('quercus'/exp OR 'quercus' OR 'oak' OR 'quercus infectoria' OR 'quercus brantii') AND ('gall' OR 'galls' OR 'oak gall' OR 'gallnuts' OR 'nutgall').

Participant or population Not applicable.**Intervention** Not applicable.**Comparator** Not applicable.**Study designs to be included** Phytochemistry studies; in vitro studies; in vivo studies.**Eligibility criteria** The inclusion criteria: (1) experimental studies to identify and/or quantify

phytochemical compounds; (2) in vitro and in vivo biological activity studies. The exclusion criteria: (1) reviews and meta-analyses; (2) secondary studies (i.e., editorials, commentaries, letters to the editor, conference abstracts, or any other publications without original data); (3) studies investigating other types of galls than those collected from *Quercus* sp.; (4) studies investigating the oak galls in combination with other plant materials or substances; (5) duplicate studies or databases; (6) studies not written in English; and (7) publications with full text not available and the corresponding author could not be contacted.

Information sources Electronic databases: PubMed, Embase.

Main outcome(s) Phytochemical screening, antioxidant activity, total phenolic content, total flavonoid content, total tannin content; biomarkers of oxidative stress, biomarkers of inflammatory condition, antibacterial activity, antifungal activity, antitumor activity, antidiabetic activity.

Quality assessment / Risk of bias analysis Not applicable.

Strategy of data synthesis Not applicable.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Country(ies) involved Romania.

Keywords *Quercus*; oak galls; bioactive phytochemicals; phenolic compounds; antioxidants; pharmacological properties; in vitro; in vivo; toxicity.

Contributions of each author

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