



POLISTINAE (HYMENOPTERA, VESPIDAE) VENOM IN BRAZIL: STATE-OF-THE-ART

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The crude venom of social wasps is composed of a mixture of biologically active agents, including proteins, peptides, and low-molecular-weight compounds, which holds significant pharmacological potential. Despite increasing interest, the available literature on wasp venom remains limited. The objective of this work was to present an overview of studies on Polistinae venom in Brazil, assessing current advances, gaps in knowledge, and potential avenues for future pharmacological research. We searched the CAPES, Web of Science, and PubMed using the terms “social wasp” AND “wasp venom”, as well as “vespa social” AND “peçonha de vespa” to include Portuguese publications. A total of 56 original articles published between 1986 and 2024 were reviewed. We extracted information such as year of publication, species studied, venom integrity, extraction conditions, additives used, and study focus. The data retrieved were organized into tables and summarized using percentage calculations and graphical visualizations. The figures were generated in R using the circlize package, and additional graphical tools were used for exploratory analysis. The CAPES’ database yielded most of the articles (98.2%). Our results reveal a strong bias toward *Polybia paulista* Ihering, 1896, from the Epiponini tribe, which alone accounted for 42.8% of studies. Moreover, 16 out of the 18 species studied belonged to the same tribe, indicating that most native species remain unassayed. Research has mainly focused on neurological activity and peptide sequencing, while one study explicitly addressed cancer, despite its status as the second leading cause of death in Brazil and worldwide. Additionally, no standardized venom extraction protocol was identified, raising concerns about reproducibility and comparability across studies. These findings underscore the urgent need to broaden the taxonomic scope of Polistinae venom research in Brazil, to establish standardized extraction methods, and to expand biomedical investigations into underexplored areas, such as anticancer and antitumor potential.

KEYWORDS: Social wasps; Peptides; Pharmacological activity.