



**A SYSTEMATIC REVIEW: ANALYSIS OF THE NATIVE MICROBIOTA OF SANDFLIES AND ITS  
INTERACTION WITH *LEISHMANIA***

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**Abstract**

Sandflies are highly adaptable to various environments and climatic conditions. They are responsible for the transmission of *Leishmania*, and their biology, including different feedings, could influence their microbiota and consequently their ability to allow the proliferation of the parasite and their transmissibility. Research on the diverse microbial communities in the midgut of phlebotomines and their interactions with *Leishmania*—including the potential benefits or drawbacks for protozoan transmission—remains limited. To address this gap, a systematic review was designed to compile and assess existing data on sandfly microbiota and its relationship with *Leishmania*, potentially suggesting effective control strategies. The review protocol was published on the Open Science Framework platform, and database searches were conducted shortly thereafter. The search strategy employed three key themes: sandflies, microbiota, and *Leishmania*, resulting in 1,315 studies—404 from Web of Science, 429 from PubMed, and 482 from Scopus. After the initial screening, which involved removing duplicates, non-English articles, and non-research papers, 576 articles remained for further evaluation. Titles and abstracts were then assessed according to predefined inclusion and exclusion criteria. The first reviewer shortlisted 31 studies for full-text analysis, while the second selected 29. A third reviewer resolved discrepancies, finalizing 30 studies for full-text review, data extraction, and bias assessment using an adapted SYRCLE Risk of Bias tool. After the full-text review of the 30 papers, data will be collected and recorded in REDCap for risk of bias analysis. Studies with a lower risk of bias will undergo detailed data extraction on sandflies, microbiota, and *Leishmania*, followed by a meta-analysis using multivariate statistical methods.

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