INPLASY

Strain-Specific Therapeutic Potential of Lactiplantibacillus plantarum: A Systematic Scoping Review Protocol

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ADMINISTRATIVE INFORMATION

Support - Chulalongkorn University.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 February 2025 and was last updated on 20 February 2025.

INTRODUCTION

*R*eview question / Objective This systematic scoping review aims to evaluate the therapeutic potential and clinical benefits of specific Lactiplantibacillus plantarum (L. plantarum) strains in human health, identifying their strain-specific effects across various medical conditions.

Background L. plantarum stands out due to its broad-spectrum health benefits. As a lactic acid bacterium within the Lactobacillus genus, L. plantarum is commonly found in the food industry, particularly in various fermented foods, as well as in the human gastrointestinal tract. Its remarkable ability to survive harsh environments and tolerate various situations make it a strong candidate for therapeutic applications.

Rationale Despite the growing interest in L. plantarum, a significant gap remains in understanding the diversity among its strains and their specific health benefits. While many studies focus on its safety and general health benefits, there has been limited attention to the strain-specific effects on individual health conditions.

METHODS

Strategy of data synthesis A systematic literature search was conducted using PubMed and Embase to identify relevant full-text articles published in English. The search strategy utilized the keywords "Lactiplantibacillus plantarum," "Lactobacillus plantarum," or "L. plantarum" in "human" studies.

Eligibility criteria Eligible studies included those that assessed L. plantarum as a monotherapy, without combining it with other probiotic species,

in human studies. The following types of studies were excluded: (1) Non-original research (e.g., reviews, protocols, letters, comments, and guidelines); (2) Studies that did not focus on L. plantarum monotherapy (i.e., those that mixed it with other probiotic species); (3) Non-human or non-animal studies; (4) Unpublished or non-peer-reviewed studies; and (5) Studies published in languages other than English.

Source of evidence screening and selection An information specialist assisted in designing the search strategy to identify original, peer-reviewed articles that evaluated the therapeutic potential of specific L. plantarum strains. The study selection process involved four independent reviewers, who screened articles for eligibility based on predefined inclusion and exclusion criteria. Any discrepancies between reviewers were resolved through consensus discussions.

Data management Two independent reviewers extracted data from the selected studies. The extracted information included: (1) Study characteristics; (2) Patient characteristics; (3) Outcomes (including measurement methods for each disease and any additional relevant information).

Reporting results / Analysis of the evidence The data will be qualitatively categorized based on each health condition related to L. plantarum.

Presentation of the results The data will be present qualitatively.

Country(ies) involved Thailand.

Keywords Lactiplantibacillus plantarum, Probiotics, Strain-specific effects, Gut microbiome, Immunomodulation, Human clinical trials

Contributions of each author
Author 1 - Oranut Chatsirisakul - Screening the papers, extracting data, writing the original draft preparation, and writing the review and editing.
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