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REVIEWER'S REPORT

Manuscript No.: IJAR-57987

Title: CENTELLA ASIATICA (URB.) L.: THE HERBAL ELIXIR OF EASTERN MEDICINE,

Recommendation:

Accept after minor revision

Rating	Excel.	Good	Fair	Poor
Originality			✓	
Techn. Quality		✓		
Clarity		✓		
Significance	✓			

Reviewer's ID: JPR-Bilqees Hamza

Detailed Reviewer's Report

General Overview

The manuscript titled "*Centella asiatica (Urb.) L.: The Herbal Elixir of Eastern Medicine*" provides a detailed and comprehensive review of one of the most prominent botanical agents in traditional Asian medicine. The primary objective of the article is to synthesize the extensive ethnobotanical history, phytochemistry, and diverse pharmacological activities of this multi-faceted herb, commonly known as Gotu Kola or Mandukaparni. The authors explore its traditional applications across Ayurvedic and Traditional Chinese Medicine systems, mapping these historical uses against modern empirical evidence. To accomplish this, the work aggregates a wide array of literature covering extraction methodologies, active biochemical constituents—particularly triterpenoid saponins—and clinical applications targeting cognitive enhancement, wound healing, and anti-inflammatory pathways.

The research topic holds outstanding relevance in contemporary ethnopharmacology and natural product chemistry, as the pharmaceutical sector increasingly seeks validated bioactive compounds from traditional sources to address complex, chronic health conditions. A major strength of the manuscript lies in its broad, multi-disciplinary scope, bridging ancient clinical applications with cutting-edge molecular research. The narrative flow is highly logical, transitioning smoothly from botanical description and habitat distribution to microscopic identification, active biochemical profiles, and therapeutic trials. The

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authors maintain a objective and academic perspective throughout, carefully balancing empirical experimental validations with historical ethnobotanical data.

In terms of overall contribution, the manuscript serves as a highly valuable reference text for researchers in pharmacology and phytochemistry. By providing an updated compilation of the mechanisms of action underlying the herb's neuroprotective and dermatological properties, the study effectively fills an interpretive gap between folklore applications and molecular pharmacology. The review is a rigorous and high-quality scholarly effort that aligns well with the standards of an advanced herbal medicine journal.

Suggestions for Improvement

While the review is highly comprehensive and meticulously structured, a few minor refinements and structural enhancements would further optimize its clarity, academic depth, and visual impact prior to publication.

- Inclusion of a Summary Table for Bioactive Constituents:** The phytochemistry section provides a detailed text-based breakdown of triterpenes, volatile oils, and flavonoids. To improve scannability, it is suggested that the authors insert a summary table linking the major chemical components, such as asiaticoside, madecassoside, asiatic acid, and madecassic acid, directly to their respective plant parts and primary pharmacological activities.
- Clarification on Standardization and Quality Control:** The discussion on therapeutic formulations would be significantly strengthened by adding a brief paragraph addressing the challenges of botanical standardization. Touching upon the variations in active constituent concentration based on geographical distribution, soil conditions, and harvesting seasons will provide critical context for the pharmaceutical evaluation of natural extracts.
- Enhancement of Biochemical Mechanisms Narratives:** The section on neuroprotective properties outlines excellent clinical outcomes regarding memory enhancement and anxiety reduction. The manuscript would benefit from a more explicit explanation of the underlying biochemical pathways, such as the modulation of brain-derived neurotrophic factor expression or the inhibition of acetylcholinesterase, to fully ground the behavioral findings in molecular science.
- Contextualizing Toxicological Profiles:** While the manuscript rightfully celebrates the therapeutic efficacy of the herb, it should also include a concise, balanced subsection on safety, toxicology, and potential drug interactions. Documenting the established maximum tolerated doses or known contraindications in specific patient populations will ensure a thoroughly comprehensive review.

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- 5. Updating Recent Clinical Trial Data:** The literature review coverage is broad and covers foundational texts effectively. However, integrating three to four notable clinical trials or in vivo studies from the past two years regarding dermatological or cognitive applications would firmly position the review at the absolute forefront of contemporary research.
- 6. Standardization of Botanical Nomenclature:** The manuscript demonstrates an excellent command of language and technical terms. A minor proofreading pass is recommended solely to verify that the species name is consistently italicized throughout all section headings, subheadings, and table titles, and that formatting for common abbreviations remains uniform across the entire text.

Recommendation

Recommendation: Accept with Minor Revisions

Justification

The manuscript makes a meaningful and highly detailed contribution to the literature on natural products by providing a comprehensive, well-structured, and scientifically grounded review of *Centella asiatica*. The review effectively balances historical ethnomedical contexts with modern pharmacological validations. The areas identified for improvement are minor, focusing primarily on the addition of a chemical summary table, slight elaboration on molecular mechanisms, and minor literature updates. These adjustments will further refine the clarity and academic utility of this strong manuscript, making it entirely suitable for publication.