

REVIEWER'S REPORT

Manuscript No.: IJAR- 59275

Title: Exploring the Bioactive Phytoconstituents of *Merremia vitifolia*: A Qualitative Phytochemical Approach

Recommendation:

Accept after minor revision

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

Reviewer's ID: Bilqees Hamza

Detailed Reviewer's Report

The submitted manuscript titled "**Exploring the Bioactive Phytoconstituents of *Merremia vitifolia*: A Qualitative Phytochemical Approach**" investigates the qualitative phytochemical profile of the methanolic extract of *Merremia vitifolia* (family Convolvulaceae). Grounded in pharmacognosy and ethnomedicine, the study aims to provide qualitative evidence backing the traditional applications of *M. vitifolia* in treating inflammation, fever, headaches, skin conditions, and digestive disorders across Asian regions.

To evaluate the presence of secondary metabolites, the authors conducted cold maceration extraction of shade-dried *M. vitifolia* plant material using methanol. The resulting crude extract was subjected to standard qualitative biochemical colorimetric and precipitation tests to screen for ten major phytochemical classes.

The experimental results confirmed the presence of alkaloids, carbohydrates, glycosides, phenolic compounds, tannins, and flavonoids. Conversely, tests for saponins, phytosterols, proteins, and free amino acids yielded negative results under the specific extraction and testing conditions used. The manuscript concludes that the rich presence of polyphenolic constituents (flavonoids, phenolics, tannins) and alkaloids provides a preliminary biochemical rationale for the plant's traditional therapeutic uses and warrants further quantitative, chromatographic, and in vivo investigations.

Key Strengths

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- 1. Clear Research Objective and Rationale:** The study addresses a relevant topic in natural product chemistry by seeking to establish baseline phytochemical profiles for a traditionally utilized medicinal plant.
- 2. Systematic Qualitative Testing:** The authors employed standard, widely accepted biochemical assays (e.g., Mayer's, Dragendorff's, Molisch's, Ferric Chloride, Alkaline Reagent tests) across a wide array of secondary metabolite categories.
- 3. Comprehensive Methodological Context:** The introduction and discussion successfully integrate relevant prior research regarding *Merremia vitifolia* and related species within the Convolvulaceae family.
- 4. Visual Documentation:** The manuscript includes photographs illustrating plant parts (*M. vitifolia* leaf and flower) as well as the test tube results for each qualitative test.

Detailed Recommendations for Improvement

1. Methodological and Experimental Clarifications

- Specific Plant Organs Used:** Section 2.1 notes that "disease-free plants of *Merremia vitifolia*" were collected, and Section 2.2 describes grinding "coarse powder". However, it is not explicitly clear whether whole plants, leaves only, or stems were extracted for this specific experiment. Line 115 mentions "plant parts were coarsely powdered," but exact organ proportions or specific parts used must be explicitly clarified in Section 2.1.
- Extraction Conditions:** In Section 2.2, please provide the specific mass of coarse powder used (in grams) and the total volume of methanol used for maceration, as well as the exact yield (in grams or percentage w/w) of the concentrated crude extract obtained. Also, complete the missing temperature value in Section 2.2 line 125 (preserved at °C).
- Discrepancy Between Abstract and Results:** In the Abstract (lines 20–22), it is stated that "saponins and glycosides exhibited positive reactions, whereas steroids were detected in relatively lower amounts". However, in Section 3 (Results Table 3.1 and lines 218–221), saponins and phytosterols/steroids are explicitly listed as **absent**. This contradiction between the Abstract and the Results section must be aligned to ensure scientific accuracy.

2. Editorial, Typographical, and Formatting Corrections

- Formatting and Spacing Errors:**
 - In Section 2.1 (line 113), correct the text rendering error ambient room temperature 25°C to 30°C to a clean standard form such as "ambient room temperature (25 °C to 30 °C)".

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- In Section 2.3.5 (lines 178–183), fix spelling/typos in heading/text: "Libermann-Burchard's Test" (spelling inconsistency with Table 3.1) and broken sentences around "brown ring at the junction and a turning to deep green".
- In Section 3 Table 3.1 (lines 227), fix typos in table entries: change "Forth Test" to "Froth Test".
- **Figure Captions and Formatting:**
 - Figures 3.1 to 3.19 show images of test tubes with hand-written labels. Ensure high-resolution imagery and consistent typography/labeling in figure captions to improve visual readability.
 - In Figure 1.1 and 1.2 headings (lines 60–61), formatting should follow standard journal guidelines.
- **Citation & Reference Consistency:**
 - Ensure all references in the text are formatted consistently according to standard style guidelines (e.g., APA 7th).

3. Deepening Discussion and Analytical Rigor

- **Solvent Polarity Analysis:** The discussion rightly notes that methanol's high polarity influences compound recovery. The authors should expand slightly on why non-polar or moderately polar compounds (such as phytosterols or certain aglycones) might be absent in a crude methanolic fraction versus sequential polar/non-polar fractionations.
- **Quantitative and Bio-Guided Future Work:** Expand Section 5 slightly to outline specific chromatographic techniques (e.g., HPLC-DAD, LC-MS/MS) and biological target assays (e.g., anti-inflammatory COX-2 enzyme inhibition assays, DPPH scavenging assays) that should directly follow this qualitative work.

Final Evaluation and Recommendation

Recommendation:

The manuscript provides valuable, well-structured baseline data on the qualitative phytochemical composition of *Merremia vitifolia*. The experimental procedures for preliminary screening are comprehensive. However, before publication, the authors must address the direct contradiction regarding saponin and steroid presence between the Abstract and the Results section, fill in missing extraction parameters (mass, temperature, yield), and clean up formatting/typographical errors throughout the text. Once these revisions are implemented, the manuscript will be suitable for publication.