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# International Journal of Advanced Research

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## REVIEWER'S REPORT

Manuscript No.: IJAR-57696

**Title:Phytochemical screening of mung bean (Vigna radiata (L.) Wilczek) genotypes for dual-purpose bioactive and antioxidant traits in Burkina Faso.**

**Recommendation:**
Accept as it is □□□□□□□□□□□□.
**Accept after minor revision**□□□
Accept after major revision
Do not accept (*Reasons below*)

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

Reviewer Name: **ANAPANA GOPAL**

**Reviewer's Comment for Publication.**

**General Comments**

The manuscript presents a relevant and timely study on the phytochemical composition and antioxidant activity of mung bean genotypes cultivated in Burkina Faso. The comparative evaluation of both seeds and leaves provides added value, particularly because leaf tissues are often neglected in legume biochemical studies. The study is generally well designed and includes useful biochemical analyses such as total polyphenols, flavonoids, DPPH, FRAP, PCA, and hierarchical clustering. The topic is suitable for publication in the field of plant biochemistry, food science, and nutritional crop improvement.

However, the manuscript still requires moderate revision to improve scientific clarity, methodological precision, statistical interpretation, language quality, and consistency in presentation. Some grammatical issues, formatting inconsistencies, and unclear methodological details should be corrected before publication.

**Content and Originality**

The study demonstrates originality by simultaneously analyzing seeds and leaves of mung bean genotypes under Sudanian agro-ecological conditions of Burkina Faso, which is relatively underexplored. The identification of promising genotypes such as VR-172, M34, and VR-114 for antioxidant potential is valuable for breeding and biofortification programs.

Strengths:

Comparative assessment of seed and leaf biochemical traits.

Integration of multivariate statistical analyses (PCA and clustering).

Relevance to nutritional security and crop improvement in Africa.

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Points needing improvement:

The novelty should be more explicitly stated in the Introduction.

The discussion sometimes repeats results instead of providing deeper biological interpretation.

The manuscript lacks comparison with similar studies conducted under African environmental conditions.

The rationale for selecting the ten genotypes should be better explained.

**Technical Quality**

The experimental design and biochemical assays are generally appropriate. Standard analytical methods such as Folin–Ciocalteu, DPPH, and FRAP were correctly referenced. Statistical analyses including ANOVA, PCA, correlation analysis, and HCA strengthen the manuscript.

Minor technical concerns:

1. Replication details are missing. The number of biological and technical replicates should be clearly mentioned.

2. Units are inconsistent throughout the manuscript (e.g., mg GAE/g DW, μg QE/100 mg DW, mmol AAE/g fresh leaves). Standardization is recommended.

3. The FRAP protocol contains possible unit errors:

"1.25 μL of 1% potassium hexacyanoferrate" appears unrealistic and likely should be "1.25 mL."

4. Some statistical interpretations are weak:

Correlation values are discussed without adequate biological explanation.

PCA explained variance (29.8% and 21%) is acceptable but not particularly high; this limitation should be acknowledged.

5. The manuscript should specify the software used for PCA and cluster analysis.

**Language and Presentation**

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The manuscript is understandable but requires substantial English editing for grammar, sentence structure, spacing, punctuation, and scientific style.

Examples of issues:

"leave" should be "leaves" in keywords.

Missing spaces after citations and punctuation throughout the manuscript.

Several awkward expressions reduce readability:

"metabolic superiority of leaves" could be replaced with "higher accumulation of phenolic compounds in leaves."

Some sentences are overly long and repetitive.

Formatting issues:

Inconsistent italicization of scientific names.

Table formatting needs improvement.

Reference formatting is inconsistent in several entries.

Professional language polishing is strongly recommended before publication.

**Structure and Organization**

The manuscript follows a logical scientific structure:

Abstract

Introduction

Materials and Methods

Results

Discussion

Conclusion

Strengths:

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## REVIEWER'S REPORT

Results are organized clearly into subsections.

Figures and tables are relevant and informative.

Areas needing improvement:

1. The Discussion section should better integrate findings with existing literature instead of restating results.

2. Figure legends should be more detailed and self-explanatory.

3. Table captions should include units and statistical explanation.

4. Some sections require smoother transitions between paragraphs.

The conclusion is concise and relevant but could include broader implications for food security and breeding programs.

**References and Citations**

The manuscript cites relevant and recent literature, including studies from 2024–2026. References are generally appropriate and support the study objectives.

Concerns:

1. Several in-text citations have formatting inconsistencies:

Missing spaces before citations.

Duplicate punctuation.

2. Some references appear incomplete:

Wu et al. (2026) citation lacks volume/page details.

3. SSRN references should be replaced with peer-reviewed published articles if possible.

4. Citation style should be standardized according to journal guidelines.

**Overall Recommendation**

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## REVIEWER'S REPORT

The manuscript addresses an important topic and contains useful scientific data with practical implications for nutritional crop improvement and antioxidant research. The work has publication potential after moderate revision.

Main revisions required:

Improve English language and formatting.

Clarify methodological details and units.

Strengthen discussion and interpretation.

Correct technical inconsistencies in protocols and references.

**Final Decision**

Minor Revision