

# Review of: "Phytochemical Analysis and Antioxidant Activity of Extracts from Berchemia zeyheri — A Swazi Medicinal Plant"

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Potential competing interests: No potential competing interests to declare.

## Improving Clarity

### Title and Abstract:

- **Example:** The title may not clearly convey the scope or specific aims of the study.
- **Improvement:** Ensure the title reflects the main objectives and findings. The abstract should succinctly summarize the background, methods, key results, and conclusions.

### Introduction and Background:

- **Example:** The introduction might not adequately explain why *Berchemia zeyheri* was chosen for the study or its significance in Swazi traditional medicine.
- **Improvement:** Provide a clear rationale for selecting this plant. Include background information on its traditional uses, previous studies, and the significance of its phytochemical and antioxidant properties.

### Methods Section:

- **Example:** Insufficient detail on the experimental procedures can hinder reproducibility.
- **Improvement:** Describe the methods in detail, including the type and preparation of plant materials, extraction methods, identification techniques (e.g., HPLC, GC-MS), and assays used for antioxidant activity. Include any controls and standards used.

### Results Section:

- **Example:** Results may be presented in a confusing manner or without sufficient context.
- **Improvement:** Use clear and well-labeled tables, figures, and graphs to present the data. Summarize key findings in the text and explain what each figure/table illustrates.

### Discussion Section:

- **Example:** The discussion might not effectively relate the findings to the broader scientific context or address the limitations of the study.

- **Improvement:** Discuss how the results compare with previous studies, the potential implications for medicinal use, and any limitations of the study. Suggest areas for future research.

## Making Findings More Robust and Convincing

### Larger Sample Size:

- **Example:** A study with a small sample size might not provide reliable or generalizable results.
- **Suggestion:** Increase the number of plant samples and extract types analyzed to ensure the results are representative and statistically significant.

### Replicates and Controls:

- **Example:** Lack of replicates and proper controls can undermine the reliability of the findings.
- **Suggestion:** Include multiple replicates for each experiment and appropriate control samples to validate the results. Use positive controls known for antioxidant activity.

### Comprehensive Phytochemical Analysis:

- **Example:** A limited analysis might miss important phytochemicals.
- **Suggestion:** Use a range of advanced techniques (e.g., HPLC, GC-MS, LC-MS) to identify and quantify a broad spectrum of phytochemicals. Provide detailed profiles of the major compounds found.

### Quantitative Antioxidant Assays:

- **Example:** Insufficient detail on the antioxidant assays might lead to questions about the reliability of the results.
- **Suggestion:** Use multiple, well-established assays (e.g., DPPH, ABTS, FRAP) to measure antioxidant activity. Report the results with appropriate statistical analyses, including measures of variability and significance.

### Comparative Studies:

- **Example:** The study might not compare the antioxidant activity of *Berchemia zeyheri* with other known antioxidants.
- **Suggestion:** Include comparative analyses with known antioxidants (e.g., ascorbic acid, tocopherol) to contextualize the antioxidant capacity of *Berchemia zeyheri* extracts.

### Longitudinal and Environmental Variability:

- **Example:** Single-time-point analysis might not account for variability due to season or environmental conditions.
- **Suggestion:** Conduct longitudinal studies to observe how phytochemical composition and antioxidant activity vary over time and under different environmental conditions.

### Mechanistic Insights:

- **Example:** The study might not explain the mechanisms behind the observed antioxidant activity.

- **Suggestion:** Investigate and discuss potential mechanisms of action for the antioxidant properties observed. This could include studying the interaction of specific phytochemicals with oxidative stress markers.

By addressing these areas, the article can become clearer, more thorough, and more persuasive, thereby providing stronger evidence for the phytochemical and antioxidant properties of *Berchemia zeyheri*.