# 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.

**Overall Assessment:**

The research on phytochemical analysis and antioxidant activity of *B. zeyheri* extracts from the Kingdom of Eswatini presents a valuable contribution to the scientific literature on medicinal plants. However, there is room for improvement in the depth of result interpretation, inclusion of comparative analyses, and expansion of antioxidant assays. Addressing these aspects would strengthen the scientific impact and applicability of the findings. Overall, the study lays a solid foundation for further exploration of the therapeutic potential of *B. zeyheri* in pharmacological research. Here are some suggestions for improvement:

1. The research focuses only on the DPPH assay for antioxidant activity. Including other antioxidant assays or exploring reported biological activities would strengthen the connection between phytochemicals and potential health benefits. While the DPPH assay is a commonly used method for assessing antioxidant activity, incorporating additional assays, such as ABTS or FRAP, could offer a more comprehensive understanding of the antioxidant capacity of *B. zeyheri* extracts. Multiple assays would strengthen the validity of antioxidant activity results.
2. While the qualitative analysis identified various phytochemicals, a more in-depth discussion on their potential contribution to the observed bioactivity is missing.
3. Hexane extracts generally have lower yields of bioactive compounds compared to more polar solvents like methanol or acetone. Focusing on hexane extracts might have limited the potential to find more potent antioxidant fractions.
4. Explore reported biological activities (e.g., anthelmintic) of the plant and identify the specific bioactive compounds responsible.
5. Isolate and purify specific bioactive compounds from the most promising extracts (e.g., ethyl acetate extracts).
6. While the study presents comprehensive results of phytochemical analysis and antioxidant activity evaluation, the discussion is relatively brief. A more in-depth analysis and interpretation of the findings, including comparisons with existing literature and potential implications, could enrich the discussion section.
7. The methodology describes the extraction process in detail; however, it lacks information on the extraction efficiency or yield of bioactive compounds from the plant material. Including data on extraction efficiency would enhance the reproducibility and applicability of the findings.
8. The study concludes that various extracts from *B. zeyheri* possess phytochemicals and exhibit weak to moderate

radical scavenging activity. However, the generalization of results without specifying the bioactive compounds responsible for antioxidant activity or their concentrations limits the clarity of conclusions.