

Peer Review

Review of: "Evaluation of Chemical Content and Phytochemical Composition of Yemeni Almond Cultivars"

Fouzia Alla¹

1. Mohamed I University, Oujda, Morocco

This research investigates the chemical composition, mineral content, and phytochemical constituents of nine local Yemeni almond cultivars from two major regions: BaniMatar and Khawlan. Through standard analytical techniques, the authors evaluate macronutrients (moisture, protein, fat, ash, carbohydrates), essential minerals (e.g., Fe, Zn, Cu, Mn, K, Ca, Mg, etc.), and secondary metabolites (total phenols and flavonoids). The results highlight that some Yemeni almond cultivars surpass international almond varieties in nutritional value, especially in their micronutrient and phytochemical content. The study suggests the potential of these cultivars for use in functional foods and nutraceuticals.

Strengths of the Paper

Original and Relevant Topic: The paper addresses a significant gap in knowledge about Yemeni almond cultivars, which are underrepresented in scientific literature.

Comprehensive Analysis: The use of a wide range of parameters (macronutrients, minerals, phenolics, flavonoids) provides a holistic view of nutritional quality.

Robust Methodology: Analytical methods (AOAC, spectrophotometry) are well-established and appropriate for this type of study.

Well-Structured Results: Tables and figures are informative and enhance understanding.

Cluster Analysis: The statistical treatment (ANOVA, clustering, correlation heatmaps) adds depth to the interpretation of the findings.

Local Impact: The study could significantly benefit local agriculture and food industry sectors by promoting indigenous almond varieties.

Areas for Improvement (with Suggestions)

A. Language and Grammar

Issue: Several typographical and grammatical errors (e.g., “Razqi Kabir” vs. “Large fit Razky”), inconsistent terminology (Razqi/Razky).

Suggestion: A thorough proofreading by a native English speaker or professional editor is recommended. Standardizing cultivar names would improve clarity.

B. Scientific Clarity and Depth

Issue: Some sections, especially in the Results and Discussion, heavily rely on comparisons with other studies but lack critical interpretation.

Suggestion: Discuss more *why* certain cultivars had higher/lower nutrient contents. Were these differences likely genetic, environmental, or due to agronomic practices?

C. Methodological Details

Issue: The explanation of extraction methods (cold methanol extraction, yield determination) is too brief.

Suggestion: Clarify volumes, replicates, and controls used. Were blanks or standards run alongside? Add these to enhance reproducibility.

D. Data Presentation

Issue: Tables are information-dense and difficult to navigate at times.

Suggestion: Highlight top-performing cultivars per trait using colour or symbols. Consider summarizing key findings in a comparison chart or radar plot.

E. Discussion Structure

Issue: The discussion occasionally overlaps with the results or veers into listing without critical engagement.

Suggestion: Use subheadings (e.g., “Macronutrient Variation”, “Mineral Content”, “Phytochemicals”) and end each section with a key interpretation point.

F. Literature Contextualization

Issue: Some references are outdated or insufficiently integrated into the argument (e.g., comparisons to 1990s data).

Suggestion: Update references with more recent studies on almonds, including international databases or recent nutritional reviews.

G. Conclusion and Future Directions

Issue: The conclusion summarises findings well but does not deeply explore future implications.

Suggestion: Propose practical applications (e.g., in local food products), conservation strategies for these cultivars, or potential breeding programmes.

Additional Comments

Ethical and Data Statements: Well-handled. The availability of data and clear authorship contributions are commendable.

Impact Potential: With some polish, this study could significantly impact local agriculture, health-oriented product development, and plant genetic conservation.

Accept with minor to moderate revisions.

This paper contributes valuable data on under-researched almond cultivars with clear relevance to food science, plant physiology, and sustainable agriculture. Addressing the linguistic and analytical points above would elevate its impact and accessibility.

Declarations

Potential competing interests: No potential competing interests to declare.