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Editorial

The Promising Hypoglycemic Potential of Moringa Oleifera Extracts: Insights from Recent Studies An Editorial Note

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*Moringa oleifer*a, often hailed for its remarkable medicinal properties, has gained significant attention in recent years for its potential hypoglycemic effects. Recent studies have delved into the extraction and optimization processes to harness the full potential of Moringa's bioactive compounds.

One study by Pérez-Tejas., et al. (2020) [1]. highlighted the challenges of heterogeneous gelation during the extraction process but showcased the significant hypoglycemic activity of hydroalcoholic extracts from moringa seeds. Through a meticulously designed experimental setup, the researchers optimized the extraction conditions to achieve a higher yield of total polyphenol content. The findings were promising, revealing that oral administration of the extracts at a concentration of 75 mg/kg body weight resulted in over 65% inhibition of diabetes in a murine model by day 12. This effect is likely attributed to the presence of compounds such as thiocarbamate, phenylglucoside isothiocyanate, and various phenolic compounds, known for their hypoglycemic properties.

Another study by Linares., et al. (2018) [2] compared different extraction methods to obtain crude ethanolic leaf extracts with high yields of phenolic compounds from *Moringa oleifera*. The magnetic stirring extraction method emerged as the most effective, yielding the highest concentrations of phenols. The researchers also confirmed the presence of various bioactive compounds, including volatile coumarins, flavonoids, and tannins, through phytochemical characterization and thin-layer chromatography.

Herman-Lara., et al. (2024). [3] Studied the best conditions for encapsulating hydroalcoholic *Moringa oleifera* seed extracts using ionic gelation. A hydroalcoholic extract was prepared from powdered seeds using a 70:30 ethanol-water mix and a 1:18 w/v ratio. Ultrasound-assisted extraction was conducted at 80 kHz, 100% intensity, for 30 min at 30°C. The study (Full factorial treatment design) utilized varying quantities of extract and sodium alginate to assess encapsulation efficiency, form, antioxidant activity, and polyphenol and flavonoid content. Encapsulation was performed via ionic gelation extrusion. The encapsulated products and extracts were stored for 4 weeks at 8°C in 50 mL falcon tubes. Psychrometric data showed a relative humidity of 52.4g water/100g dry air. Moisture content in the encapsulated products ranged from 78.7 to 92.43g/100g but decreased after 28 days, leading to smaller diameters and quicker release times. Over four weeks, encapsulated samples retained their original color, whereas non-encapsulated extracts darkened. The most effective encapsulation, found in encapsulated product 6 using 100 mL extract and 2.5 g sodium alginate, maintained the highest levels of polyphenols and flavonoids and preserved over 85% of the antioxidant activity.

Ionic gelation is a promising method for preserving hydroalcoholic *Moringa oleifera* seed extracts. These studies underscore the potential of *Moringa oleifer*a as a natural remedy for managing diabetes, emphasizing the importance of optimizing extraction methods to maximize the yield of bioactive compounds. As research continues to explore the depths of Moringa's medicinal properties, its role in therapeutic applications is likely to expand, offering a natural alternative for diabetes management.

Bibliography

1. Pérez-Tejas., *et al*. (2020).
2. Linares., *et al.* (2018).
3. Herman-Lara., *et al.* (2024).