



UNIVERSIDAD
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TOTAL PHENOLICS AND ANTIRADICAL ACTIVITIES IN HONEY POWDERS OBTAINED BY TWO DIFFERENT DRYING PROCEDURES



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BACKGROUND /PROBLEM DESCRIPTION

- Numerous studies support the existence of compounds in honey responsible for diverse biological activities that make it interesting compared to other natural or artificial sweeteners.
- Powdered honey has many advantages in terms of handling, transport, storage and use compared to raw honey; however, the production process and properties of powdered honeys are still little studied.

PURPOSE

The aim of this work is to evaluate total phenols and antiradical activities against different free radicals in powdered honeys obtained using maltodextrin as Carrier by two drying techniques (vacuum drying and freeze drying) from 9 samples of honeys from 4 different botanical origins (multifloral, lavender honey, thyme honey and vetch honey).

METHODOLOGY

Total phenolics content was determined using the Folin–Ciocalteu reagent. The antiradical activities were evaluated against four radicals (ABTS•+, ROO•, •OH and O2•-) by the following procedures: TEAC, ORAC, AOA and SRS methods.



RESULTS AND CONCLUSION

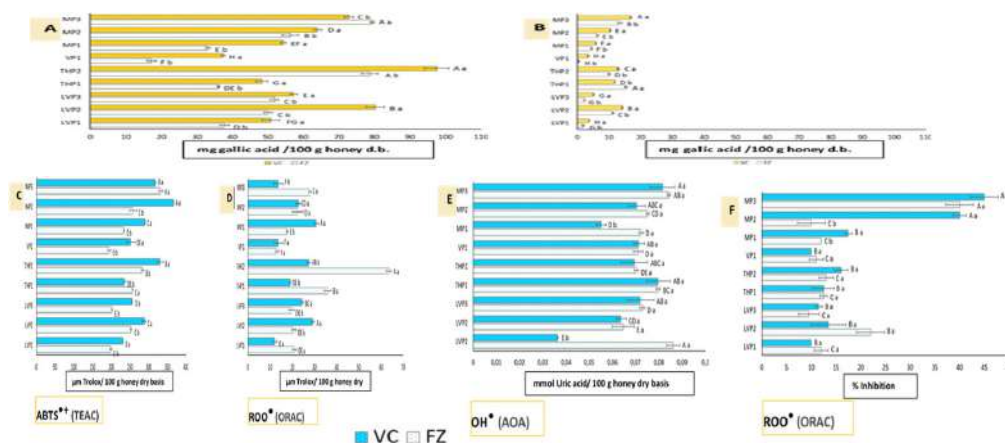


Figure 1: Total phenolics in of honey powders obtained with freeze (FZ) and vacuum (VC) drying (A) and in their methanolic extracts (B). Antioxidant activity of honey powders obtained with freeze (FZ) and vacuum (VC) drying, against different radicals (ABTS•+ (C), ROO• (D), •OH (E) and O2•- (F)). Error bars represent the standard deviation for each data point. Different capital letters (A–H) indicate significant differences ($p < 0.05$) between the different botanical origins. Different lowercase letters (a,b) indicate significant differences ($p < 0.05$) between drying procedures.. LVP lavender honey powder. THP Thymus honey powder. VP Vetch honey powder. MP Multifloral honey powder..

Most of the powdered honeys showed lower values for total phenols and antiradical activities against ROO• and O2•- radicals than the raw honeys, while the values for antiradical activity against ABTS•+ radical were higher in the powdered honeys.

Both the drying method and the botanical origin of the samples influenced the total phenolics content as well as the antiradical activities against ABTS•+ and ROO• radicals. The antiradical activity against the O2•- radical depended only on the botanical origin of the honey while neither the botanical origin nor the drying procedure significantly influenced the antiradical activity against the •OH radical.

These results show that the antiradical activities of powdered honeys against different radicals are also different and depend on several compounds, which may vary quantitatively or qualitatively from one honey to another and which may or may not be modified by the drying process.

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Practical implications for beekeepers. The development of appropriate methods to obtain honey powder and the study of the functional properties of this product will expand the honey's market for food, pharmaceutical and cosmetic use, thus boosting the beekeeping sector.