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Enhancing the Bioactive Profile of Bee-Collected Pollen through Solid-State Fermentation

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INTRODUCTION

Bee pollen is highly nutritious, rich in proteins, carbohydrates, lipids, fibers, and bioactive compounds like polyphenols, flavonoids, and vitamins, making it an ideal fermentation

OBJECTIVE

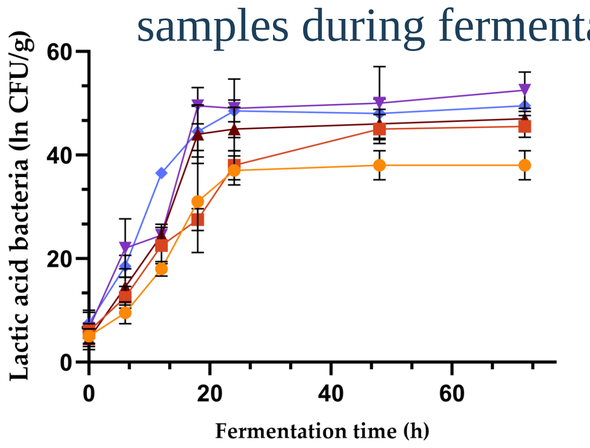
The aim of this study was to use probiotic solid-state fermentation of bee pollen to obtain a product with an improved profile of bioactive compounds and enhanced bioavailability. The fermentation process utilized lactic acid bacteria, specifically *L. plantarum* and *L. acidophilus*

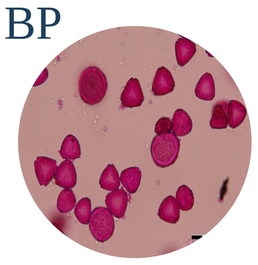
MATERIALS AND METHODS

Five samples of bee pollen collected from the USAMV Cluj Apiary were analyzed before and after the fermentation process in order to determine the energy value, the biologically active compounds and to determine the antioxidant activity using spectrophotometric and HPLC methods. *Lactobacillus plantarum* and *L. acidophilus* was used for the fermentation process of the bee pollen.

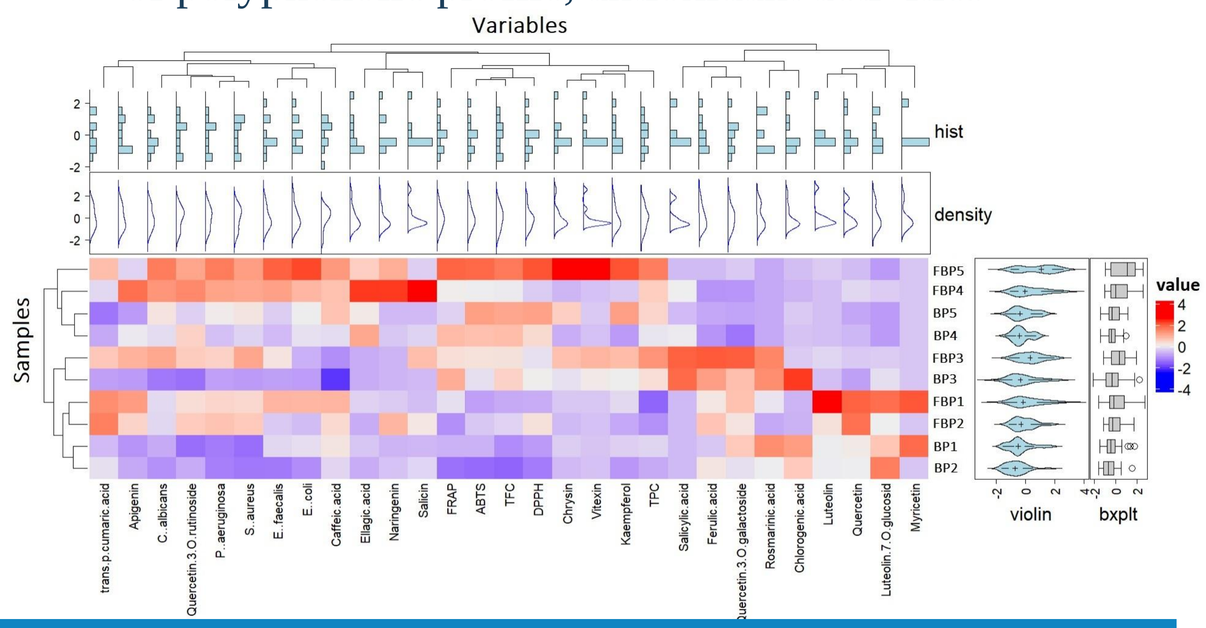
RESULTS

Kinetic monitoring of lactic acid bacteria in BP samples during fermentation





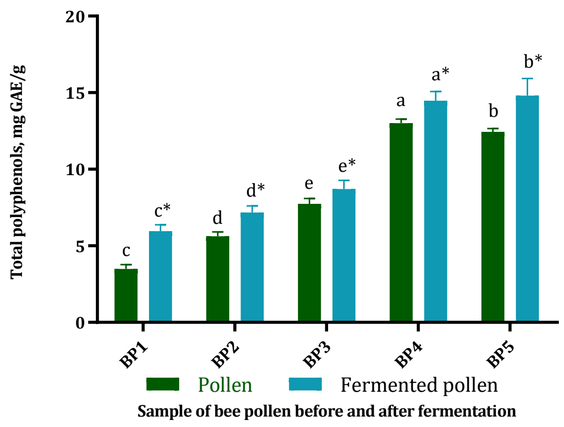
Hierarchical clustering and heatmap visualization of polyphenolic profile, antioxidant activities



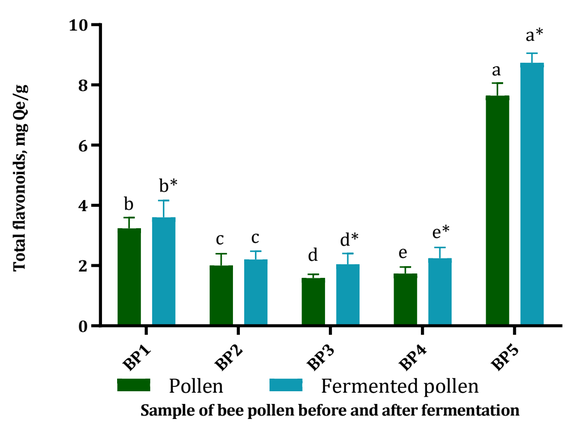
CONCLUSIONS

Probiotic fermentation seems a promising option for increasing the value of bioactive compounds in pollen and their bioavailability, but additional research is needed to evaluate the effect of probiotic bacteria in the obtained product and their beneficial impact on health.

Total polyphenols content
Folin Ciocîlteu method

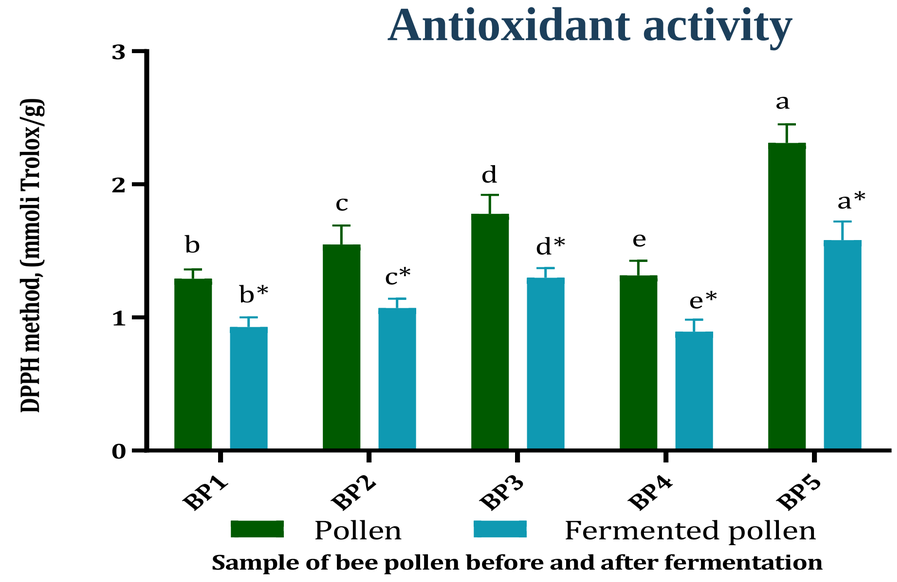


Total flavonoids content
$AlCl_3$ method

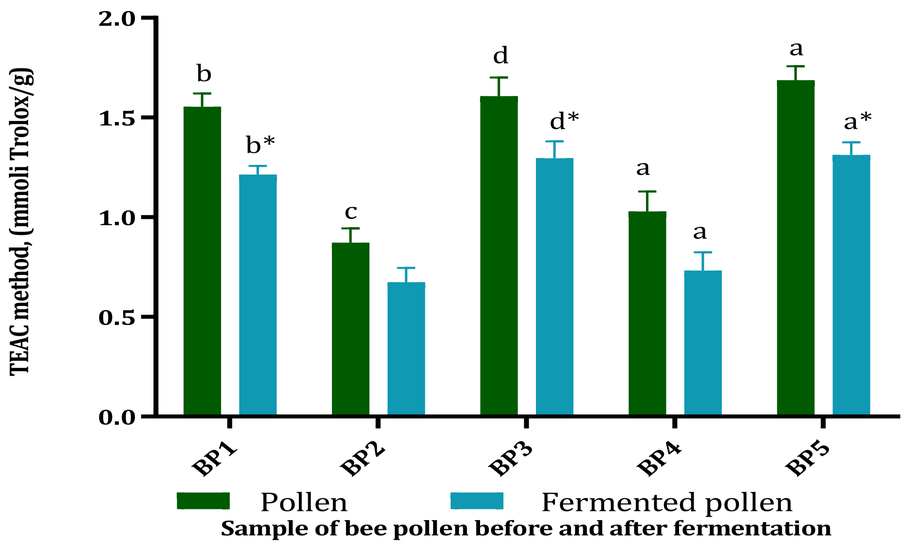


Antioxidant activity

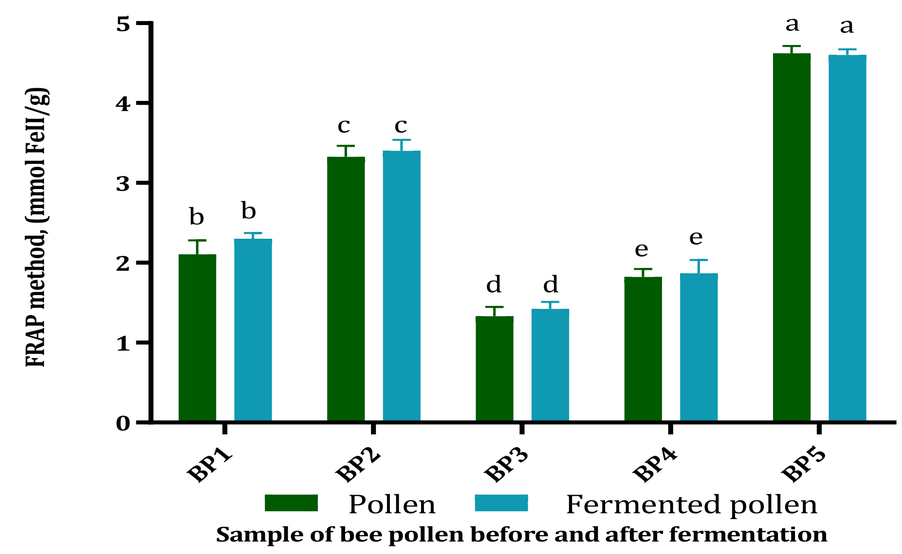
DPPH method



ABTS method



FRAP method



ACKNOWLEDGEMENTS

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