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PP-582 [Pollination and Bee Flora]

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Evaluation of the antioxidant and antibacterial potential of phenolic compounds extracted from *Melipona beecheii* honey against *Salmonella enterica* Typhimurium and *Listeria monocytogenes*

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INTRODUCTION

Melipona beecheii honey has been used since ancienty times for its medicinal properties. This food is made from the néctar of flowers, which is transformed in the stomach of bees. This honey is mainly composed of monosaccharides and polysaccharides and also contains other minor molecules, such as proteins and phenolic compounds. The latter have demonstrated their ability to inhibit the growth of bacteria such as *Escherichia coli* and *Staphylococcus aureus*. To evaluate the antioxidant and antimicrobial activity of phenolic in *M. beecheii* honey against *Salmonella enterica* Typhimurium ATCC 13311 and *Listeria monocytogenes* ATCC 15313.

METHODOLOGY

The honey was collected from Ticimul, Yucatán, México

The extraction of phenolic compounds (PE) was carried out according to the method described by Ferreres et al. (1994) using Amberlite XAD7HP columna, and methanol as a mobile phase.

Crude phenolic extract (CPE)

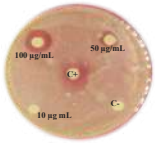
Antimicrobial activity and minimum inhibitory concentration (MIC) (Ramón-Sierra et al. 2020)

The antioxidant activity of PE was carried out by DPPH mechanism and reducing power.

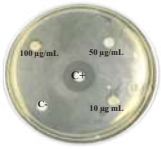
RESULTS

M. beechii honey contains 50.17 ± 2.5 mg of gallic acid equivallent (GAE) per 100 g of honey.

Antimicrobial activity



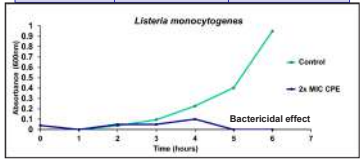
Salmonella enterica Typhimurium

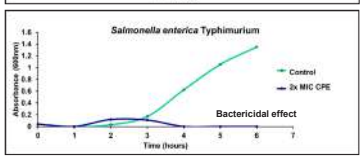


Listeria monocytogenes

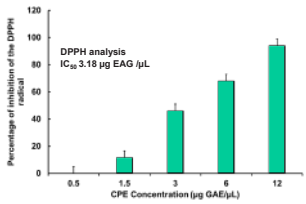
Minimum inhibitory concentration

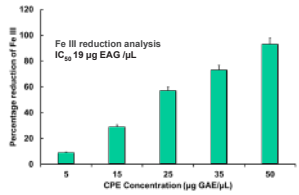
	Salmonella enterica Typhimurium	*Listeria monocytogenes*
ECF	111.5 ± 1.2 µg EAG/ µL	100 ± 1.2 µg EAG/ µL





Antioxidant activity





CONCLUSIONS

The phenolic extract of *M. beecheii* exhibits antimicrobial activity against *S. enterica* Typhimurium and *L. monocytogenes* in addition to presenting antioxidant activity. This finding contributes to the understanding of *M. beecheii* honey as a functional food with bioactive characteristics, as well as its potential to promote health.

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Ramón-Sierra, J., Martínez-Guevara, J. L., Pool-Yam, L., Magaña-Ortiz, D., Yam-Puc, A., & Ortiz-Vázquez, E. (2020). Effects of phenolic and protein extracts from Melipona beecheii honey on pathogenic strains of Escherichia coli and Staphylococcus aureus. Food Science and Biotechnology, 29, 1013-1021.

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Evaluation of the antioxidant and antibacterial potential of phenolic compounds extracted from Melipona beecheii honey against Salmonella enterica Typhimurium and Listeria monocytogenes

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Melipona becheeii honey has been used since ancient times for its medicinal properties. This food is made from the nectar of flowers, which is transformed in the stomach of bees. This honey is mainly composed of monosaccharides and polysaccharides and also contains other minor molecules, such as proteins and phenolic compounds. The latter have demonstrated their ability to inhibit the growth of bacteria such as E. coli and S. aureus. To evaluate the antioxidant activity and antimicrobial activity of the phenolic compounds in M. beecheii honey against. Salmonella enterica Typhimurium ATCC 13311 and Listeria monocytogenes ATCC 15313. The honey was collected from Ticimul, Yucatán, Mexico. The extraction of phenolic compounds (PE) was carried out according to the method described by Ferreres et al., 1994. Using an amberlite XAD7HP column, and methanol as a mobile phase. Antimicrobial activity and minimum inhibitory concentration (MIC) were determined as described by Ramón-Sierra et al., 2020. The antioxidant activity of PE was carried out by the DPPH mechanism and reducing power (Shimada et al., 1992). Honey contains 50.17 ± 2.5 mg of gallic acid equivalent (EAG) per 100 g of honey. PE was shown to inhibit the growth of both pathogens evaluated, requiring a minimum inhibitory concentration of 111.5 ± 1.2 µg/ µL and 100 ± 1.2 µg/ µL EAG respectively for S. enterica Typhimurium and L. monocytogenes, showing a bactericidal effect. On the other hand, PE was shown to stabilize the DPPH radical by 50% (IC50) with a concentration of 3.18 µg/ µL EAG and 19 µg/ µL EAG to reduce Fe III. The phenolic extract of M. beechii honey exhibits antimicrobial activity against S. enterica Typhimurium and L. monocytogenes in addition to presenting antioxidant activity. This finding contributes to the understanding of M. beecheii honey as a functional food with bioactive characteristics, as well as its potential to promote health.