

Evaluation of molds and yeasts in *Melipona bicolor* honey

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INTRODUCTION & AIM

Stingless bee (SB) honey is naturally more fluid and has higher water activity than *Apis mellifera* honey, which favors the presence of microorganisms [1-2]. Studies on honey from different SB species are essential, as behavioral variability among Brazil’s more than 300 species can directly influence the microorganisms present in the product [3]. This study evaluated the microbiological profile of ten honey samples from different SB species collected in rural areas.

METHOD

- **Samples**
 - **A:** *Tetragonisca angustula*;
 - **B and C:** *Melipona bicolor*;
 - **D, E, and F:** *Melipona marginata marginata*;
 - **G, H, I, and J:** *Melipona quadrifasciata quadrifasciata*;



Figure 1. Sample collection: a. Hive location; b. Opening of the pots; c. Honey collection by suction; d. honey after collection.

- **Microbiological parameters evaluated:**
 - Coliforms [4];
 - *Salmonella* spp. [5];
 - Lactic Acid Bacteria (LAB) [6];
 - Mesophilic Microorganisms (MM) [7];
 - Yeasts and fungi [8];

RESULTS & DISCUSSION

Parameter	Result	Interpretation
Coliforms	< 3 MPN/mL	Within acceptable limits
<i>Salmonella</i> spp.	Not detected	Safe from this pathogenic contamination
Fungi	≤ 1 log CFU/mL	Low fungal presence
MM	3.40 – 5.28 log CFU/mL	May reflect contamination or natural microbiota
LAB	<3 – 4.40 log CFU/mL	Possibly beneficial native microbiota. But in refrigerated sample, no cells was detected
Yeasts	3.28 – 6.31 log CFU/mL	Naturally present; may serve functional roles in hive. But, nine samples are over the legal limite (Paraná State - 10 ⁴ CFU/g). Values above may suggest hive management issues or natural microbial load

CONCLUSION

The observed microbiological diversity may be linked to variations in bees’ foraging behaviors and the physicochemical characteristics of the honeys. A higher acidity, a feature of this type of honey, may create an unfavorable environment for the survival of certain pathogenic microorganisms.

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REFERENCES

