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Abstract of 300 words

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EXAMPLE ABSTRACT

Volatilome, botanical origin, and isolation the mold *Gibellulopsis fusca* in Kelulut *Heterotrigona itama* honey from Malaysia

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Kelulut *Heterotrigona itama* (Cockerell, 1918) is an Asian stingless bee (Hymenoptera, Apidae, Meliponini) distributed in Brunei, Indonesia, Malaysia, Singapore, and Thailand. *Heterotrigona itama* pot-honey was collected from Kampung Pulau Berangan, Jerteh, Terengganu, Malaysia, was dehydrated up to 20% moisture. The botanical origin was assessed with acetolyzed palynology. Accessory pollen of the Fabaceae family was the most frequent, *Cassia* sp. 28% and aff. *Machaerium* sp. 40% of the total counts. Fifty-seven volatile organic compounds (VOCs) from different chemical classes were

identified and quantified by relative abundance using Head Space-Solid Phase Micro Extracion/Gas Chromatography-Mass Spectrometry (HS-SPME/GC-MS): 9 aliphatic organic acids, 14 alcohols, 4 aldehydes, 1 aromatic, 12 esters, 4 ketones, 2 monoterpenes, 4 oxides, 2 sulfides, and 5 unknowns. phenylethyl alcohol exhibits antimicrobial and inhibitory activity of quorum sensing (Çevikbaş et al., 2024). Several of them have been reported as bioactive: 1. Dimethyl disulfide and dimethyl trisulfide lead to the change of β-galactosidases and the leakage of cellular nucleic acids from the bacterial cells. 2. Linalool oxides (cis/trans) are potent against *Staphylococcus aureus*. 3. Octanoic and nonanoic acids have broad spectrum microbicidal activity and inhibit *S. aureus* biofilm. 4. Alcohols such as ethanol, benzyl alcohol, and phenylethyl alcohol are commonly produced by yeast and bacterial fermentation. The mold *Gibellulopsis fusca* (Thirum. & Sukapure) Giraldo López & Crous 2018 was isolated for the first time from *H. itama* honey. Considering its phylogeny within Plectosphaerellaceae, its ecology as a soil inhabitant, and based on evidence of VOC production in related fungi, it is hypothesized that *Gibellulopsis fusca* produces bioactive VOCs with functions in microbial competition. A profile including compounds with antifungal and microbial competition, is similar to the reported for *Fusarium oxysporum* and other soil fungi, includimg acetic acid, ethyl acetate, ethanol, and linalool oxides, while linalool oxides are more likely of botanical origin.

Keywords botanical origin, HS-SPME/GC-MS, *Heterotrigona itama*, *Gibellulopsis fusca*, pot-honey, Malaysia, volatile organic compounds (VOCs)