

**IDENTIFIKASI SENYAWA METABOLIT SEKUNDER MADU DAN
PROFIL POLEN PADA PRODUK LEBAH KLANCENG (*Tetragonula laeviceps*
Smith, 1857) SEBAGAI INDIKATOR PAKAN POTENSIAL DI DESA
SIRAHAN, MAGELANG**

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INTISARI

Lebah *klanceng* (*Tetragonula laeviceps* Smith, 1857) merupakan spesies lebah tanpa sengat yang dibudidayakan oleh masyarakat di Desa Sirahan, Kab. Magelang. Budidaya lebah *klanceng* berkontribusi dalam meningkatkan ekonomi masyarakat dan pelestarian lingkungan dari peran lebah sebagai penyerbuk alami tumbuhan. Faktor yang dapat meningkatkan produksi madu adalah keberadaan tumbuhan sumber pakan lebah di sekitar sarang. Oleh karena itu, penelitian ini dilakukan untuk mengidentifikasi tumbuhan sumber pakan lebah *klanceng* di Desa Sirahan, Kab. Magelang melalui identifikasi metabolit sekunder madu dan profil polen pada produk lebah *klanceng* (*bee bread*, madu, dan propolis). Analisis metabolit sekunder dilakukan dengan uji skrining fitokimia melalui reaksi reagen dan GC-MS (*Gas Chromatography-Mass Spectrometry*). Identifikasi profil polen dilakukan dengan pengamatan terhadap preparat mikroskopis polen pada *bee bread*, madu, dan propolis. Hasil skrining fitokimia diketahui bahwa, madu *klanceng* mengandung alkaloid, fenolik, terpenoid, dan tanin. Berdasarkan GC-MS madu *klanceng* mengandung senyawa aromatik yang didominasi oleh phenylethyl alcohol, serta senyawa fenolik seperti 3,4-dihydroxyphenylglycol (4TMS derivatif), phenol, 2-ethyl, phenol, 2,6-bis(1,1-dimethylethyl) dan terdeteksi senyawa aldehida aromatik yaitu benzeneacetaldehyde dan cinnamaldehyde, 2-hexyl-(E). Berdasarkan analisis profil polen pada produk lebah *klanceng* dan perbandingan dengan polen tumbuhan di sekitar sarang lebah diketahui bahwa, lebah *klanceng* bersifat general dalam mencari sumber pakan. Tumbuhan dengan jumlah yang paling banyak teramati adalah tumbuhan dengan habitus herba, seperti famili Amaranthaceae dan Liliaceae.

Kata Kunci: fitokimia, madu, melisopalinologi, *Tetragonula laeviceps*.

**IDENTIFICATION OF SECONDARY METABOLITES OF HONEY AND
POLLEN PROFILE IN STINGLESS BEE (*Tetragonula laeviceps* Smith, 1857)
PRODUCTS AS AN INDICATOR OF POTENTIAL FORAGE PLANTS IN
SIRAHAN, MAGELANG**

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ABSTRACT

Tetragonula laeviceps Smith, 1857 is a species of stingless bee that is farmed by the community in Sirahan Village, Magelang Regency. Stingless bee farming contributes to improving the local economy and environmental conservation through the bees' role as natural pollinators of plants. A factor that can increase honey production is the presence of forage plants around the hive. Therefore, this study was conducted to identify forage plants for the stingless bee in Sirahan Village, Magelang Regency, through the identification of secondary metabolites in honey and pollen profiles in stingless bee products (bee bread, honey, and propolis). Secondary metabolite analysis was carried out using phytochemical screening tests via reagent reactions and GC-MS (Gas Chromatography-Mass Spectrometry). Pollen profile identification was performed by observing microscopic pollen preparations in bee bread, honey, and propolis. The results of the phytochemical screening revealed that honey contains alkaloids, phenolics, terpenoids, and tannins. Based on GC-MS analysis, honey contains aromatic compounds dominated by phenylethyl alcohol, as well as phenolic compounds such as 3,4-dihydroxyphenylglycol (4TMS derivative), phenol, 2-ethylphenol, 2,6-bis(1,1-dimethylethyl) and aromatic aldehydes such as benzeneacetaldehyde and cinnamaldehyde, 2-hexyl-(E). Based on the analysis of the pollen profile in stingless bee products and a comparison with pollen from plants around the hive, it is known that *T. laeviceps* bees are generalists in their search for food sources. The most frequently observed plants are herbaceous plants, such as those in the Amaranthaceae and Liliaceae families.

Keywords: phytochemistry, honey, melissopalynology, *Tetragonula laeviceps*.