

## **DAYA ANTIMIKROBIA SARANG LEBAH MADU *Trigona* spp TERHADAP MIKROBIA PATOGEN**

Oleh

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### **INTISARI**

Potensi sarang *Trigona* spp untuk menghasilkan antimikrobia sangat tinggi, tidak hanya pada bagian propolis, melainkan keseluruhan bagian dari sarang yang terdiri dari kantong madu, kantong polen, kantong telur, dan penutup sarang. Sarang lebah madu berfungsi sebagai tempat perlindungan lebah dari predator maupun parasit seperti fungi, jamur dan virus. Sarang *Trigona* spp dapat dijadikan alternatif sumber antimikrobia alami sehingga diperlukan penelitian untuk mendeteksi aktivitas tersebut. Tujuan dari penelitian ini meneliti daya antimikrobia yang dilepaskan sarang lebah madu *Trigona* spp terhadap pertumbuhan mikrobial, meneliti komponen kimia utama yang terkandung dalam sarang lebah madu *Trigona* spp, dan meneliti keanekaragaman mikrobial dalam sarang lebah madu *Trigona* spp. Metode untuk ekstraksi sarang menggunakan ethanol 70% secara maserasi dan uji antimikrobia yang terdiri dari antibakteri dan antifungi dilakukan dengan metode difusi sumur. Rancangan penelitian yang digunakan dalam bentuk rancangan acak lengkap (RAL). Data yang diperoleh dari hasil pengamatan di laboratorium dianalisis dengan menggunakan statistik parametrik yaitu *One way ANOVA*. Hasil penelitian menunjukkan rendemen sarang lebah madu menggunakan pelarut alkohol 70% yaitu, kantong polen 47,8%, kantong madu 49,74%, kantong telur 40,92%, penutup sarang 39,05%, dan campuran keseluruhan sarang (mix) 42,74%. Analisis antimikrobia menunjukkan bahwa sarang *Trigona* spp berpengaruh menghambat pertumbuhan mikrobial patogen uji dengan konsentrasi hambat minimal 1% (v/v). Senyawa kimia utama sebagai antimikrobia berasal dari asam lemak dan fenol.

Kata Kunci: antimikrobia, sarang lebah, *Trigona* spp, mikrobial patogen

## **Antimicrobial Activity of *Trigona* spp Beehive Against Pathogenic Microbes**

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### **ABSTRACT**

High potential of *Trigona* spp beehive to produce antimicrobial comes not only from the propolis, but also the whole part of its plant that consists of honey sacs, pollen sacs, eggs sacs, and beehive's seals. Honeycomb protects the honey bees from predators and parasites such as fungi, molds, and viruses. *Trigona* spp beehive can be used as an alternative source of natural antimicrobial; therefore, there should be a study to detect the activity. The aims of this research were: 1) to investigate the potential of antimicrobial released by *Trigona* spp beehive toward the growth of microbial; 2) to investigate main substances in *Trigona* spp beehive; and 3) to observe the diversity of microbes in *Trigona* spp beehive. Extraction of beehive was conducted using maceration with 70% alcohol, while antimicrobial and antifungal tests were conducted using well diffusion method. The design of this research was complete randomized design (CRD). Data that were obtained from laboratory observation were analyzed using one way ANOVA. The results of this research showed that the reaction yield of beehive extract using alcohol 70% solvent were 47.8% from pollen sacs, 49.74% from honey sacs, 40.92% from egg sacs, 39.05% from the lids, and 42.74% from the whole part (mixture) of beehive. The antimicrobial analysis showed that the beehive of *Trigona* spp inhibited the growth of the tested pathogenic microbes with 1% (v/v) minimum inhibitory concentration. The main antimicrobial substances were fatty acids and phenols.