

## **Botanical origin and nutritional values of bee bread of stingless bee (*Heterotrigona itama*) from Malaysia**

### **ABSTRACT**

Bee bread is the bee-collected pollen with the mixture of honey and bee salivary enzymes, stored inside the bee hive. Malaysia has limited information on bee bread collected by the stingless bee *Heterotrigona itama*. Therefore, this study aims to determine the botanical origin and nutritional values of bee bread from *H. itama*. Melissopalynological analysis was performed using scanning electron microscopy (SEM) to determine the bee bread's botanical origin. The proximate analysis, water activity, sugar profile, amino acid profile, vitamin C content, mineral content, and heavy metal content of the bee bread were analyzed. From the results obtained, *Bidens pilosa* was found in bee bread from all sampling locations. Bee bread contained high protein (21.70–23.33%) and carbohydrate (57.06–58.89%) contents. Glucose was the predominant sugar found (average 11.499 g/100 g). Eight essential amino acids were quantified, and arginine was detected the highest. The major mineral element in the bee bread was potassium (average 6705.9 mg/kg), followed by phosphorus and magnesium. Toxic metals such as lead, mercury, cadmium, and arsenic were detected but within the safe limits permitted in food. The data obtained contribute towards expanding the knowledge on the nutritional information specifically for *H. itama* bee bread in Malaysia.