

Preference of *Apis cerana* to Six Pollen Substitutes

^AR. Widowati, ^AW. Sjamsuridzal, ^AA. Basukriadi, ^AA. Oetari, ^BE. Anwar
^AV. Enfinali, ^AE.A. Rismawanti, ^AB.A. Luhur

^A Department of Biology, ^B Department of Pharmacy,
Faculty of Mathematics and Natural Sciences,
University of Indonesia, Depok 16424 Indonesia

Adequate substitutes for pollen are necessary for maintaining healthy honeybee colonies during periods of pollen dearth. The research aimed to make pollen substitutes preferred by honeybee *Apis cerana*. Basic ingredients of pollen substitutes (PSs) were defatted soy flour and skim milk. There were six pollen substitutes prepared for the honeybee colonies. Three PSs contained yeasts associated with the honeybee, one PS contained commercial baker yeast, and two PSs without adding dry yeasts. PS1 contained basic ingredients, *Candida hawaiiiana* CR015, and honey; PS2 contained basic ingredients, *C. parapsilosis* CR057, and honey; PS3 contained basic ingredients, *Debaryomyces hansenii* CR133, and honey; PS4 contained basic ingredients, commercial baker yeast, and honey; PS5 contained basic ingredients and sugar syrup; PS6 contained basic ingredients and honey. The PSs were fed daily in paste form. No pollen substitute was given to the control colonies. The pollen substitutes were fed to colonies of *A. cerana* for 20 days, and they were allowed to forage on flowers. Amount of pollen substitutes consumed by the honeybee were weighted daily. The consumption data of each pollen substitute per day were used to determine the preference of the honeybee for a particular pollen substitute. The results showed that the pollen substitutes containing *C. hawaiiiana* CR015 (PS1) and commercial baker yeast (PS4) were more preferred by *A. cerana* compare to other pollen substitutes (PS2, PS3, PS4, and PS6). The pollen substitute made of basic ingredients and sugar syrup (PS5) was the least consumed or not preferred by *A. cerana*.

Key words: *Apis cerana*, honeybee, pollen substitutes, preference, yeasts