

EFFECTS OF COPROPHAGAL BEHAVIOR ON NYMPHAL SURVIVORSHIP OF THE GERMAN COCKROACH, *BLATTELLA GERMANICA* AND THE SMOOTH COCKROACH, *SYMPLOCE PALLENS* (DICTYOPTERA: BLATTELLIDAE)

LAY-TYNG QUAH AND CHOW-YANG LEE

Urban Entomology Laboratory Vector Control Research Unit, School of Biological Sciences,
Universiti Sains Malaysia, 11800 Penang, Malaysia.

Abstract The German cockroach, *Blattella germanica* (L.) and the Smooth cockroach, *Symploce pallens* (Stephens) are important cosmopolitan household pests which infest hotels, restaurants and apartments. Coprophagy is defined as the behavior of fecal consumption. It plays an important role in providing nutrients when food is scarce and transferring gut symbiont and microorganisms among insects. Generally, it is believed that coprophagy helps in the development of younger animals as well as immature insects. The aims of this project were (1) to evaluate the role of coprophagy in the survivorship (2) to demonstrate the role of coprophagy in the development and (3) to compare the preference between the alternative food and fecal matter of *B. germanica* and *S. pallens* nymphs. First instars of both species were collected within 24 h of hatching. Eight conditions were prepared; (1) food (mouse pellet), (2) female feces, (3) male feces, (4) food + female feces, (5) food + male feces, (6) female feces + male feces, (7) food + female + male feces and (8) nil (deprived of food and feces). Each condition was replicated four times. 20 newly hatched nymphs were introduced into polypropylene containers (14.0 cm x 8.0 cm x 6.5 cm) with harborages and water, which were provided ad libitum. Teflon was applied along the inner rims of the containers to prevent the nymphs from escaping. Observations were made twice a day. The survivorship and the development of nymphs were monitored and recorded until all the nymphs in the control condition had died. Data collected from the samples with more than two variables were subjected to One-way ANOVA and means were separated using Tukey HSD ($P < 0.05$). Samples with two variables were analyzed using T-test ($P < 0.05$). Results indicated that the first instars of *B. germanica* and *S. pallens* consumed feces when alternative food (mouse pellet) was scarce. These insects survived significantly longer when food was available compared to those which were provided with fecal matters only. Besides that, the early nymphs lived longer when feces was provided compared with those deprived of food and feces. The first instars of *B. germanica* and *S. pallens* consumed relatively more food than feces and did not show any preference for male or female feces. However, we found that coprophagy did not assist in the development of the first instars of both species to the subsequent stages, for which food is a more crucial factor.