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EFFECTS OF COOKED OIL ON BIOCONVERSION OF KITCHEN WASTE BY HOUSEFLY LARVAE

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Abstract

Housefly larvae can bioconvert organic wastes to produce sustainable proteins. This study investigated the effect of the cooked oil as a part of kitchen waste on the growth of housefly larvae and the microbial community structure in the rearing residue. After adding 2% (W/W) oil to the substrate, housefly larvae exhibited the highest bioconversion (14.91%) and substrate consumption rate (40.82%), with the highest reduction rate of ~ 52.39% and ~ 70.46% for total organic carbon (TOC) and total nitrogen (TN), respectively. With the increase of oil concentration, the larval crude fat content and crude protein content showed an increase and decrease, respectively, coupled with a slight increase in the ratio of oleate acid (C18:1) and linoleate acid (C18:2) among fatty acids. Additionally, an increase and decrease were also found in the relative abundance of phylum Proteobacteria and Bacteroidota, respectively, with the presumable migration of most of the microbes from larval gut to residue, and the possible colonization of *Helcococcus* and *Globicatella* from the environment.

Key words: bioconversion, cooked oil, housefly larvae, kitchen waste, microbial community structure

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