

Abstract

Rapid urbanization in Jakarta has driven significant population growth, intensifying challenges in nutrition and waste management. The demand for animal-based protein will increase proportionately. However, the production of animal-based protein is lacking due to inadequate feeding. Concurrently, Jakarta generates over 8.7 kilotons of waste daily, the majority of which is organic and contributes to environmental hazards like methane accumulation. *Hermetia illucens* or Black soldier fly larvae (BSFL), known for valorizing organic waste into protein-rich biomass and nutrient-dense frass, offer a sustainable solution to both issues. This study investigates BSFL growth with the usage of tofu dreg and spent coffee ground as feed. This is done by exposing BSFL to various formulations of tofu dreg and spent coffee grounds for 10 days, measuring biomass growth and proximate nutrient profile. Results show that chicken feed outperformed tofu dreg and spent coffee ground formulations. However, the tofu dreg-heavy substrate performed close to chicken feed as substrate. These findings highlight the viability of tofu dreg-based substrates for BSFL cultivation and reinforce the broader potential of BSFL bioconversion as an integrated strategy for addressing urban protein insecurity and organic waste burdens in Jakarta.

Keywords: Black soldier fly, BSF, black soldier fly larvae, BSFL, valorization, organic waste, coffee grounds, spent coffee grounds, SCG, tofu dreg, TD