

## Nutritional composition of black soldier fly prepupae reared on different organic waste substrates

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### **Nutritional composition of black soldier fly (*Hermetia illucens*) prepupae reared on different organic waste substrates.**

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#### **Abstract**

##### **BACKGROUND:**

Black soldier fly larvae are converters of organic waste into edible biomass, of which the composition may depend on the substrate. In this study, larvae were grown on four substrates: chicken feed, vegetable waste, biogas digestate, and restaurant waste. Samples of prepupae and substrates were freeze-dried and proximate, amino acid, fatty acid and mineral analyses were performed.

##### **RESULTS:**

Protein content of prepupae varied between 399 and 431 g kg<sup>-1</sup> dry matter (DM) among treatments. Differences in amino acid profile of prepupae were small. On the other hand, the ether extract (EE) and ash contents differed substantially. Prepupae reared on digestate were low in EE and high in ash (218 and 197 g kg<sup>-1</sup> DM, respectively) compared to those reared on vegetable waste (371 and 96 g kg<sup>-1</sup> DM, respectively), chicken feed (336 and 100 g kg<sup>-1</sup> DM, respectively) and restaurant waste (386 and 27 g kg<sup>-1</sup> DM, respectively). Prepupal fatty acid profiles were characterised by high levels of C12:0 in all treatments.

##### **CONCLUSION:**

Since protein content and quality were high and comparable for prepupae reared on different substrates, black soldier fly could be an interesting protein source for animal feeds. However, differences in EE and ash content as a function of substrate should be considered.

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**Keywords:** black soldier fly; fatty acid, amino acid; feed; protein; vegetable waste processing