

By-product development from BSF Larvae shows satisfactory protein and lipid contents

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OBJECTIVE

By-product development from the BSF larvae and protein and lipid contents characterization in the powder product, the fresh larvae, and the fractions larvae post-fat extraction.

METHODS

The BSF larvae were reared in a circular system for reusing organic waste and the leftovers were directed to by-product development (LetsFly, Brazil). The larvae were killed by blanching at 80 °C/90 seconds. The larvae were sanitized and subjected to 40 °C/30 minutes to then be crushed (Arno Power Mix, Brazil). The liquid and solid fractions of the larvae were obtained after crushing. Fat was extracted from the liquid fraction by centrifugation (Daiki 80-2B, Brazil) and fat was extracted from the solid fraction by the press (Eurolume 456, Brazil). The post-fat extraction fractions were standardized with 5% stabilizer/emulsifier and were overrun in a planetary mixer (Mana BPM-05 AP, Brazil) until the stable foam was formed. The foam was dried at 80 °C/4 hours (Solab SL-102, Brazil) and was ground into powder (IKA A11, Brazil). Protein content by Kjeldahl method (AOAC 955.04) and lipid content by Soxhlet extraction method (AOAC 945.16) were determined in this powder product, in fresh larvae, and post-fat extraction fractions. Results are expressed as percent (%) protein/lipids per 100 grams of dry larvae and means were compared by ANOVA and Tukey test at a 5% significance level (Minitab, USA).

RESULTS

The powder product had 35% protein and 37% lipids. The fresh larvae had 37% protein and 41% lipids. The post-fat extraction liquid fraction had 32% protein and 45% lipids. The solid fraction after fat extraction had 59% protein and 9% lipids.

CONCLUSION

The powder product showed satisfactory protein and lipid contents to provide essential nutrients for human feed and it combats neophobia. The solid fraction post-fat extraction showed a higher percentage of protein and enables the development of new food sources of insect protein. The development of the by-product from the BSF larvae contributes to the biotechnological innovation of food inputs source of proteins and lipids.