

Extraction and refining of BSF Larvae oil: the lipid profile shows the potential source of oleic acid, lauric acid and omega 6,

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OBJECTIVE

Extract and refine the oil from the BSF larvae and characterize the lipid profile of the oil by saponification and chromatography.

METHODS

BSF larvae were reared in a circular system for reusing organic waste (LetsFly, Brazil) and were killed by bleaching at 80 °C/90 seconds. The larvae were sanitized and subjected to 80 °C/5 minutes to then be processed (Arno Power Mix, Brazil) by the wet fractionation method. The liquid fraction obtained after grinding was submitted to crude oil extraction by centrifugation (Daiki 80-2B, Brazil). The extracted oil was then refined in two steps: 1) degumming with phosphoric acid (85%) to remove phospholipids/gums; 2) neutralization of the oil with sodium hydroxide. The refined oil was determined: the acidity index (Adolf Lutz Institute 471/IV), expressed in percent (%) of oleic acid per gram of dry larvae; the saponification index (Adolf Lutz Institute 479/IV), expressed in milligrams of KOH per gram of dry larvae; and the fatty acid profile by GC-MS (Shimadzu GC 2010, Japan).

RESULTS

The lipid profile showed a $4.76\pm 0.23\%$ acid value and 228.19 ± 9.81 mg/g saponification value. The lipid profile by GC-MS showed a high concentration ($68.27\pm 0.40\%$) of saturated fatty acids, highlighting $42.06\pm 2.19\%$ of lauric acid (C12) and $14.08\pm 0.69\%$ of palmitic acid (C16). The lipid profile by GC-MS showed a moderate concentration ($10.60\pm 0.44\%$) of oleic acid (C18:1), considered an unsaturated fatty acid. Finally, the GC-MS profile also showed the refined oil with $8.33\pm 0.41\%$ of omega-6.

CONCLUSION

The methodology for extracting and refining the oil from the BSF Larva was satisfactory. The results of the lipid profile correlate similarity to the lipid profile of commercial coconut and palm fats. So, the refined Larva BSF oil has applicability in various industrial guidelines, including food, pharmaceutical, and cosmetics. The refined BSF Larvae oil shows a potential source of oleic acid, lauric acid and omega 6, both nutritional components beneficial to human health.