ISSN: 1391-8796
Proceedings of
5th Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
February 15, 2018

Comparison of two green methods for refining of crude oil obtained from fish waste of *Lutjanus rivulatus*

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This work was focused to compare two green methods for refining of crude oil obtained by solventless microwave extraction of waste of Lutjanus rivulatus followed by filtration. In the first method crude oil was refined by centrifugation (2800 rpm, 10 min.) and in the second method crude oil was treated with bentonite (sieved 250 mesh; 10 % w/w, 20 min) and centrifuged (2800 rpm, 10 min.). Yield, quality and storage stability of the oils were compared. Yields were found to be almost the same (≈ 25.0 %). AOAC and AOCS methods were used to determine density, free fatty acid content, peroxide value, saponification value, iodine value and acid value of the fish oils and, levels were compared with the international fish oil standards (IFOS). Except the peroxide value, other values of both oils agreed with the IFOS recommendations. Peroxide value was satisfied only by the oil obtained by the second method. Oxidative stability of the two fish oils were determined by measuring the change in peroxide value and free fatty acid content. The storage stability in the oil refined by the method two was higher during the studied period. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) levels (%) in the fish oil obtained by the second method (13.8 and 12.2 respectively) were greater than those of by the first method (2.2 and 7.3 respectively). Therefore, the second method where bentonite treated crude oil is centrifuged, is suitable to produce good quality fish oil from Lutjanus rivulatus and the oil is also a good source for EPA and DHA.

Keywords: lutjanus rivulatu, crude fish oil, refining method, bentonite.

Acknowledgements: *The Authors would like to thank Dr. M.N. Kaumal, Department of Chemistry, University of Colombo, for providing GC–MS facility*

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