



Chemical and biological studies on some edible oils.

By

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(B.Sc. Agric.Sci., Food Technology, Fayoum University, 2007)

(M.Sc. Agric.Sci., Food Technology, Fayoum University, 2014)

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Abstract

The fish processing industries produce large quantities of fish waste which often represent about 20-50% of the total fish weight. This study was to extract and analysis of fish oil from sardine, mackerel and grey mullet fish wastes and sand smelt fish (bassaria). Stability of the extracted oils encapsulated in different encapsulating agents was also investigated. The produced oils were used in feeding of rats and compared with the fat resulting from grills chicken. The results obtained showed that the crude lipid content in sardine, mackerel and grey mullet fish wastes and sand smelt fish were (12.70, 17.11, 16.84 and 6.44%) respectively. Sardine waste lipid showed high level of C22:6 n-3 and C20:5 n-6 compared to other fish and fish waste oils. The results observed that low moisture content, higher encapsulation efficiency % and flowability was shown in mackerel waste oil powder encapsulated in whey protein as wall material (1.93 ± 0.02 , 71.16 ± 0.16 and Fair) respectively. The results also showed that whey protein was superior to the other encapsulating agents used in providing protection for oils against oxidative deterioration. Sardine waste fish oil was less stable compared to mackerel waste oil and sand smelt fish oil during storage. Rats fed on basal diet containing corn oil supplemented with fish and fish waste oils recorded increase in BWG % (51.05, 54.59 and 41.42) for sand smelt fish oil, sardine and mackerel fish waste oils compared to the positive control (17.90%). The effects of feeding rats on diets containing FRFGC supplement with fish and fish waste oils on liver functions, kidney functions and liver enzymes were also investigated. The results indicated that liver, kidney functions and liver enzymes were enhanced toward the normal range. While there was significant differences between the positive control which reserved only FRFGC and all the other groups after 3 months of feeding. Histopathological results showed an improvement in organs for rats fed on corn oil, FRFGC supplemented with fish and fish waste oils for 3 months. The best improvement was observed in organs of rats fed on corn oil supplemented with mackerel waste oil.