World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Determination of Hydrolisis Condition in the Extraction of Fatty Acids from Pinchagua's (Opisthonema libertate) Heads, a By-Product of Sardine Industry

Authors : Belen Carrillo, Mauricio Mosquera

Abstract : Fatty acids are bioactive compounds widely used as nutritional supplements in the food and pharmaceutical industry. Bluefish such as sardines have a large variety of these fatty acids in their composition. The objective of this project is to extract these compounds from fishing wastes, to do this, heads of known species as Pinchagua (Opistonema libertate) were used. The conducted study represents a simplified alternative for obtaining and simultaneous saponification of oil through basic hydrolysis, which separates lipids from protein and saponifies sample all the same time to isolate the fatty acid accurately through salts formation. To do these different concentrations of sodium hydroxide were used, it was demonstrated at a concentration of 1 M the highest yield of saponified oil recovery corresponding a value of 3,64% was obtained. Subsequently, the saponified oil was subjected to an acid hydrolysis in which fatty acids were isolated. Different sulfuric acid concentrations and temperatures for the process were tested. Thus, it was shown that the great fatty acids variety were obtained at a 60 °C temperature and sulfuric acid concentration of 50% v/v. Among the obtained compounds the presence of acids such as palmitic, lauric, caproic and myristic are highlighted. Applications of this type of elements are varied and widely used in the nutritional supplements development. Thus, the described methodology proposes a simple mechanism in the revaluation of fishing industry wastes that allow directly generate high added value elements.

Keywords : fatty acids, hydrolysis, Pinchagua, saponification
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020