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Comparison between two enzymes in the hydrolysis of red tilapia scales (*Oreochromis sp.*)

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Statement of the Problem: The red tilapia scales (*Oreochromis sp.*) is an important waste of the processing of this fish and its content of protein is near of 29%, which can be used to obtain peptides with biological activity. For its extraction it is possible to use enzymatic hydrolysis with different proteases such as alcalase and flavourzyme. The objective of this work is to compare the enzymes alcalase and flavourzyme in the peptides extraction from red tilapia scales (*Oreochromis sp.*) with antioxidant and iron chelating potential.

Methodology & Theoretical Orientation: The red tilapia scales (*Oreochromis sp.*) were washed with hypochlorite 0.2 mg/L and then stored at -20 °C until processing, later they were dried and mixed. An experimental design of response surface (DOE) was carried out, central composed with the factors temperature and pH to search the optimal conditions for each enzyme. The response variables were: Protein (g/L) and degree hydrolysis GH (%). The hydrolysis time was 3 hours with constant agitation in a 500 mL reactor and substrate concentration was 8 g/L of protein.

Findings: Significant models were obtained for the variables evaluated and it was observed that the optimal conditions of pH/temperature were 8.5/58.5 °C and 7.56/53.5 for alcalase and flavourzyme respectively. For variable GH was obtained that the hydrolysis process had 17% for alcalase and 6% for flavourzyme. Besides the percentages of protein extraction were 84% for alcalase and 46% for flavourzyme. On the optimal conditions were evaluated the bioactivities, alcalase is more productive than flavourzyme due to its possible obtain 107 (µM ET/gr*mL alcalase) in comparison with 54 (µM ET/gr*mL flavourzyme), in iron chelating potential is similar for two enzymes.

Conclusion & Significance: Hydrolysis performed with alcalase is more convenient to obtain hydrolysates with bioactivity from scale fish of red tilapia (*Oreochromis sp.*).

Biography

Leidy Maritza Sierra Lopera has received BS in Biological Engineering in 2007 and MSc degree in Science and Food Technology in 2012, both from the Universidad Nacional de Colombia-Medellin Campus. Since 2009, she has been part time Professor in Universidad Nacional de Colombia-Medellin and she is a PhD student in Universidad de Antioquia, Colombia. Her research interests include food processing and food biotechnology.

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