Extraction of crude peptone from fish wastes for use as a nitrogen source in microbiological media

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ABSTRACT

This study was carried out to exploit the feasibility of production of crude peptones from fish wastes. Autolysis under acidic and alkaline conditions was used to hydrolyze fish wastes. The proximate analysis of the two produced crude peptones and the commercial peptone showed that crude peptones contained fair levels of nitrogen (up to 10.8%) although commercial product was superior with 15.1 % nitrogen. Amino acid composition of the three examined peptones demonstrated that crude peptones have a well-balanced amino acid profile with no acute deficiencies or absence of any amino acid existed in the commercial product. Three microorganisms i.e. *Pseudomonas aeruginosa*, *Lactobacillus acidophilus* and *Saccharomyces cerevisiae* were used to test the produced crude peptones as nitrogen sources in culture media. Results of OD_{600} indicated that the three species show good growth efficiency into different media supplemented with crude or commercial peptones in spite of the relative superiority of the commercial product.It could be concluded that crude peptones produced by acid and alkaline autolysis of fish wastes could be exploited as a suitable nitrogen sources for different microbiological media. The fair nitrogen content and balanced amino acid composition were obviously reflected in the good growth of different tested microorganisms. Keywords: Fish waste, crude peptone, acid, alkaline autolysis, culture media

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1- INTRUDUCTION

Total production of world fisheries reached 158 million tons in 2012 and it is expected to increase in the future mainly from the expansion of aquaculture activities. However, it is estimated that 30-60% of total fish catch is discarded as by-catch and processing wastes **(FAO, 2014).** It was found that fish wastes are profitable materials to produce valuable products like different bioactive proteins, amino acids, peptone, oil, enzymes and pigments. Recycling of fish wastes could be economically viable as