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SARDINELLE BY-PRODUCT HYDROLYSATES AS NITROGEN SOURCE FOR MICROBIAL GROWTH AND PROTEASE PRODUCTION

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Abstract

Tunisian fish-processing industries generate large amounts of by-products. Their disposal is an increasing environmental and health problem. For an economic utilization, these by-products may be used in producing higher value added products such as protein hydrolysates. In this study, protein hydrolysates with different degrees of hydrolysis (12%, 20% and 26%) were prepared from heads and viscera of *Sardinella aurita* using crude protease of *Bacillus licheniformis* NH1. The obtained hydrolysates containing 60% to 63% of proteins are tested as nitrogen or carbon sources for microbial growth and protease production. Results indicated higher level of protease activity for *Bacillus cereus* SV1 (5100 U/ml), *Bacillus amyloliquefaciens* An6 (2000 U/ml) and *Pseudomonas aeruginosa* MN7 (4200 U/ml). Interestingly, best protease production depends on the degree of hydrolysis (DH), justifying the use of different hydrolysis conditions. Sardinelle by-product hydrolysates were also found to be good substrates for *Escherichia coli* and *Saccharomyces cerevisia* growth. This approach can reduce environmental problems associated with fish waste disposal and, simultaneously, lower the cost of microbial growth and enzyme production.

Key words: biomass, fish by-product, protease, proteolytic strains, sardinelle protein hydrolysate

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