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Development of bioprocesses for the integral valorisation of fish discards

José Antonio Vázquez[a,*], Andrea Fernández-Compás[b], María Blanco[c], Isabel Rodríguez-Amado[d], Helena Moreno[e], Javier Borderías[e], Ricardo I. Pérez-Martín[d]

[a] Group of Recycling and Valorisation of Waste Materials (REVAL), Marine Research Institute (IIM-CSIC), C/ Eduardo Cabello, 6, CP 36208, Vigo, Galicia, Spain
[b] Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP), Paseo Victoria Ocampo No 1 Escollera Norte, C.C.175 - 7600, Mar del Plata, Argentina
[c] Group of Food Biochemistry, Marine Research Institute (IIM-CSIC), C/ Eduardo Cabello, 6, CP 36208, Vigo, Galicia, Spain
[d] Department of Analytical and Food Chemistry, University of Vigo, Campus As Lagoas s/n, 32004, Ourense, Spain
[e] Institute of Food Science Technology and Nutrition (ICTAN), Spanish National Research Council (CSIC), C/ José Antonio Novais, 10, 28040, Madrid, Spain

HIGHLIGHTS

- Fish discards were integrally valorised and a whole of bioproducts were obtained.
- Fish mince, gelatins, oils and fish protein hydrolysates (FPH) were produced.
- Culture media with peptones from FPH were evaluated for *P. accidilactici* growth.
- Those alternative media reduced bacterial productions between 2–5 folds.

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ABSTRACT

In the present work, we have developed a set of sequential and complementary alternatives to valorise five fish discards in order to recover and produce fish mince, oils, gelatins, fish protein hydrolysates (FPHs) with antioxidant and antihypertensive properties and marine peptones. In this last case, microbial bioconversion of marine peptones was studied by *Pediococcus acidilacti* growth, a well-known valuable lactic acid bacterium, and the concomitant production of lactic acid and pediocin SA-1. Highly digestible FPHs with a good quality of amino acids composition and antioxidant and antihypertensive properties were easily produced. In the same bioprocess, fish oils with a healthy ω-3/ ω-6 ratio were also isolated. The use of peptones derived from FPHs as bacterial media nutrient (source of organic nitrogen) led to reduction of bioproductions costs between 2–5 folds in comparison with commercial culture medium.