

Optimization of Extraction Conditions and Characteristics of Scale collagen From Sardine: *Sardina pilchardus*

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Abstract : In Morocco, fish processing industry is an important source income for a large amount of byproducts including skins, bones, heads, guts and scales. Those underutilized resources particularly scales contain a large amount of proteins and calcium. Scales from *Sardina pilchardus* resulting from the transformation operation have the potential to be used as raw material for the collagen production. Taking into account this strong expectation of the regional fish industry, scales sardine upgrading is well justified. In addition, political and societal demands for sustainability and environment-friendly industrial production systems, coupled with the depletion of fish resources, drive this trend forward. Therefore, fish scale used as a potential source to isolate collagen has a wide large of applications in food, cosmetic and bio medical industry. The main aim of this study is to isolate and characterize the acid solubilize collagen from sardine fish scale, *Sardina pilchardus*. Experimental design methodology was adopted in collagen processing for extracting optimization. The first stage of this work is to investigate the optimization conditions of the sardine scale deproteinization on using response surface methodology (RSM). The second part focus on the demineralization with HCl solution or EDTA. Moreover, the last one is to establish the optimum condition for the isolation of collagen from fish scale by solvent extraction. The basic principle of RSM is to determinate model equations that describe interrelations between the independent variables and the dependent variables.

Keywords : *Sardina pilchardus*, scales, valorization, collagen extraction, response surface methodology

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