Optimization of Treatment Conditions for Non-collagen Removal from Yellowfin Tuna Skin (*Thunnus albacares*)

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ABSTRACT

Yellowfin tuna skin (Thunnus albacares), a by-product from the processing of tuna fillet, can be used as raw material for collagen production. The removal of non-collagen composition in fish skin is a very important step in the extraction process of collagen. The optimization of treatment conditions for non-collagen removal by alkaline treatment was carried out using response surface methodology. The optimal sodium solution concentration, ratio of solution to yellowfin tuna skin and treatment time were found and validated to be 0.93N, 5:1 (v/w) and 28 hours, respectively. Under such conditions, the ratio of hydroxyproline/protein in the obtained collagen was 9.86% whilst the remaining fat content was 5.6% (dry basis). The conversion factor between hydroxyproline and collagen of yellowfin tuna (k) was 9.3.

Keywords: Collagen, Yellowfin tuna skin, Non-collagen removal, Hydroxyproline

INTRODUCTION

Collagen, one of the most abundant animal-derived proteins, accounts for approximately 30% of the protein in the animal. It is distributed mostly in skin, muscles, tendons, cartilage, bone, tooth and ligaments (Di Lullo et al., 2002). More than 29 types of collagen have been identified in different tissues, each with