



Collagen-based bioactive hydrolysates production from Blue Shark skin

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Portugal is the country with the highest levels of fish consumption in the world with an average of 59 kg per capita year. As a result, a huge amount of fish residues is produced, of which up to 30% may be skin and bone. It is well-known that fish skin has more than 80% of its total protein content as collagen. This structural protein is present in the extracellular matrices of animals and has widely applications in food, cosmetic, biomedical, and pharmaceutical industries. For decades, the main industrial exploitations of collagen have been bovine and porcine origins. However, due to religious beliefs and infectious diseases, other collagen sources are being debated. In this regard, the use of collagen with marine origin is being considered highly attractive by the industry as an important alternative source. Blue shark skin, which is an abundant by-product of Portugal processing industry rich in collagen, represents a potential source of this protein. Thus, a collagen hydrolysate was obtained from Blue Shark skin with bromelain, a plant enzyme, for the first time. As a result, low molecular weight hydrolysates were obtained with a protein concentration of 0.5%(p/p). The antioxidant activity was analysed *in vitro*, obtaining a result of 4.077 μmol Trolox Equivalent/mg protein. The ACE inhibition activity was also analysed obtaining an IC_{50} of 14.3 μg protein/mL at 1h hydrolysis. Therefore, it was possible to obtain an ingredient (hydrolysed collagen) that is currently required by industries such as cosmetic, food and nutraceutical, with high potential antioxidant and antihypertensive activities. For this, it was possible to apply a sustainable process that consumes less time and uses an alternative and abundant raw material.

Keywords: Bioactive activities, fish by-product, collagen, bromelain.

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