

## **Comparative study on extraction methods of Astaxanthin from shrimp waste**

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Astaxanthin (AST) is a natural pigment that is responsible for the pink-red color of crustaceans and fish. Astaxanthin is widely used in food, medical, cosmetic and biotechnological and ornamental fish industries. Discarded shrimp waste from processing industries could be a good source of AST. Present study compared the efficiency of extraction of AST from shrimp shell wastes by two methods; direct autolysis and autolysis of microwaved shrimp waste samples. In both methods of autolysis, shrimp waste samples were mixed with fresh crab wastes according to the following shrimp: crab ratios of weights in grams; 20:20, 40:20, 60:20, 80:20, and 100:0. All the samples were autolyzed at 60<sup>0</sup>C for 20 min. and filtered. Filtrate and residue were dried. AST in all filtrates and the residues were extracted using hexane, and quantified by measuring absorbance at 470 nm. Concentration of extracted AST by the two methods were compared by analysis of variance (ANOVA) ( $p < 0.05$ ). Maximum ( $38.45 \pm 0.94 \mu\text{g/g}$ ) and minimum ( $9.31 \pm 0.65 \mu\text{g/g}$ ) AST concentration of the dried filtrate were recorded in 40:20 and 20:20 autolyzed fresh shell fish samples respectively. Concentration of AST is significantly different in two methods in all shrimp: crab ratios studied. In both methods AST concentration increased up to shrimp: crab ratio 40:20 and then with further increment of shrimp content it gradually decreased except 80:20 ratio of microwaved method. AST concentrations of all the residue samples were zero. Results indicate that fresh sample autolyzed method gives higher concentration of AST than microwaved autolyzed method. The ratio of 40:20 shrimp: crab waste is the best combination to obtain high amount of AST yield.

**Keywords:** Astaxanthin extraction methods, Shrimp waste, Shell fish autolysis

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