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A simple and economical spectrofluorimetric alternative for Al routine analysis in seafood

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Abstract:

A simple and economical spectrofluorimetric alternative for aluminium determination in bivalve mollusks based on the fluorescent blue-green colour complex between Al(III) and salicylaldehyde picolinoylhydrazone (SAPH) has been studied. The factors that are most likely to affect were optimized with a Box-Behnken design. Optimum conditions were: pH 6.6, 0.9 mol L⁻¹ acetic acid/acetate buffer, 3.0 mmol L⁻¹ SAPH, and 50% ethanol. Detection and quantitation limits were found to be 2.7 µg L⁻¹ and 9.1 µg L⁻¹, respectively. The upper limit of application was assessed through the limit of linearity which was set as 300 µg L⁻¹. Intra-day repeatability and inter-day repeatability were evaluated showing an excellent precision for the fluorescence method (both < 5%). The method was sensitive enough for the satisfactory determination of aluminium in several bivalve mollusk samples both fresh and canned seafood. The results showed that commercial fresh wild products presented the smallest Al concentration (6-27 mg per 100 g dry weight), while bivalves preserved in cans

¹ These authors contributed equally to this work.

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