



## 3º SIMPÓSIO NACIONAL

Promoção de uma Alimentação Saudável e Segura

Contaminantes de Preocupação Emergente: Desafios  
Laboratoriais



## MERCURY *IN VITRO* BIOACCESSIBILITY IN SEAWEED (*Ulva* sp.): EFFECTS OF COOKING PRACTICES

Fabiola Helena dos Santos Fogaca<sup>1,2</sup>, Ricardo N. Alves<sup>2</sup>, Ana L. Maulvault<sup>2,3,4</sup>, Vera L. Barbosa<sup>2</sup>, Narcisa Bandarra<sup>2</sup>, Pedro Pousão<sup>2</sup>, António Marques<sup>2,3</sup>

<sup>1</sup> Embrapa, Embrapa Meio-Norte, Parnaíba, Brazil, [fabfogaca@ipma.pt](mailto:fabfogaca@ipma.pt)

<sup>2</sup> Division of Aquaculture and Upgrading (DivAV), Portuguese Institute for the Sea and Atmosphere (IPMA, I.P.), Lisbon, Portugal, [amarques@ipma.pt](mailto:amarques@ipma.pt)

<sup>3</sup> Interdisciplinary Centre of Marine and Environmental Research (CIIMAR), University of Porto, Porto, Portugal, [aluisa@ipma.pt](mailto:aluisa@ipma.pt)

<sup>4</sup> MARE – Marine and Environmental Sciences Centre, Faculty of Sciences, University of Lisbon (FCUL), Lisboa, Portugal

Seaweeds are present in most people's daily diet, either directly as raw or processed food, and indirectly through by products used in food industry. Although they are rich in soluble dietary fibres, essential minerals and antioxidants compounds, they also might be a risk for human health due to its ability to accumulate toxic elements. The maximum acceptable contaminants concentrations in food are based on the total concentrations in raw samples, which may not reflect the available amount. Bioaccessibility determines the bioaccessible element fraction by *in vitro* digestion simulation. Thus, this study used *in vitro* digestion model to assess the bioaccessibility of mercury in seaweed under different culinary practices: raw, cooked and toasted. Total-Hg was analyzed by atomic absorption spectrometry (AAS) with thermal decomposition and gold amalgamation, using an Advanced Mercury Analyzer AMA-LECO 254. Besides total-Hg levels are below the allowed limit (<0.5 mg/kg), cooking and toasting treatments increased mercury concentrations in 73.84% and 57.71%, respectively, compared with raw seaweed. Bioaccessibility of total-Hg was 4.62% for raw, 2.30% for cooked and 0.60% for toasted seaweed. However, the bioaccessible fraction of total-Hg was 15% higher for toasted samples compared to others treatments. Results showed a low concentration of total-Hg in seaweed from *Ulva* sp.; a positive effect of toasting treatment on bioaccessibility of total-Hg; and that bioaccessibility of contaminants should be considered in risk assessment for food safety.

**Keywords:** food safety; risk assessment; simulated gastric and intestinal digestion.