ANALYSIS OF ANTIOXIDANT COMPOUNDS EXTRACTED FROM *Eisenia bicyclis* AND *Sargassum fusiforme* AS A POTENTIAL SOURCE AGAINST ISCHEMIA/REPERFUSION INJURY

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Abstract: Ischemia/reperfusion (I/R) injury is manifested by blood flow deprived and consequent deprivation of oxygen to the organs followed by restoration of blood flow and tissue oxygenation, resulting in excess production of reactive oxygen species (ROS) (Granger *et al*., 2015)). Studies carried out with antioxidants show protective effects against cell damage caused by ROS (Delgado-Roche *et al*., 2010). In this sense, algae are a natural source of antioxidants with possible beneficial effects in the treatment of cellular damage caused by oxidative stress (Sánchez-Bonet *et al*., 2021). Therefore, the objective of this study was to optimise the extraction conditions of two brown algae: *Eisenia bicyclis* and *Sargassum fusiforme*, in order to obtain crude extracts with the highest possible antioxidant activity. And subsequent characterisation of the antioxidant substances using chromatographic techniques.

For this purpose, Ultrasound Assisted Extraction was employed and the variables optimised were: quantity of algae, type, volume and concentration of solvent, time-power and temperature. The conditions established as optimal were set at 9 g of seaweed, 10 mL of acetone-water (40:60), 2.5 min-150 W and 25 °C for *Sargassum fusiforme* and 1 g, 30 mL of ethanol-water (60:40), 2.5 min-75 W and 25 °C for *Eisenia bicyclis*.

The antioxidant activity (AA) was determined by DPPH and confirmed by ORAC and FRAP. The total content of polyphenols (Folin-Ciocalteu) of the extracts and polysaccharides (Dubois) of the optimised extracts were determined. The characterization of the extracted polyphenols was carried out by HPLC-DAD and the pigment content by means of HPLC-Fl.

The results corroborated the high AA of the optimised extracts of *Eisenia bicyclis* and

Sargassum fusiforme (87.42% and 86.97%, respectively), confirming their high potential for the treatment of ischemia/reperfusion injury.

Key words: Oxidative stress, natural antioxidants, *Eisenia bicyclis*, *Sargassum fusiforme*, liquid chromatography

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