

Cunha, S. A., de castro, R., Coscueta, E. R., da Silva, J. L., & Pintado, M. E. (2021). *Production, characterization and ultrafiltration of bioactive extracts derived from the microalgae *Senedesmus obliquus**. Abstract from International Conference on Algal Biomass, Biofuels and Bioproducts, Waikoloa Beach, Hawaii, United States.

Algae are very abundant worldwide and contains compounds with high biological value, such as proteins, amino acids, antioxidants. It is noteworthy that some algae species contain protein levels similar to meat, soybean and milk. Micro and macroalgae have been studied as a source of bioactive compounds, such as bioactive peptides, with properties of interest for humans and animals. In vitro, enzymatic hydrolysis is one of the most described methods for producing peptides. Thus, in this work the microalgae *Senedesmus obliquus* was used with the goal of producing water soluble extracts rich in proteins and bioactive peptides. The *Senedesmus obliquus* used showed 45.7% of protein, 9.1% of lipids, 15.6% of carbohydrates and 15.8% of fibers. Extracts were produced from the microalgae by enzymatic hydrolysis, using ultrapure water as the solvent. First, the mixture was incubated at 50°C for 2h with a cellulase to weaken the cellular wall and help releasing proteins. Secondly, the mixture was incubated with a protease at 40°C for 2h, to hydrolyse the proteins into smaller peptides. One half of the produced extract was fractionated by ultrafiltration in a Tangential Flow Filtration System (Cogent μ Scale) using a cut-off of 3KDa. The protein content was determined by Kjeldahl, the antioxidant activity was determined by ORAC and ABTS assays and anti-hypertensive property was determined by the inhibition method of Angiotensin-I converting enzyme (iACE). The hydrolysis strategy resulted in high levels of hydrolysis with a yield of 52% of soluble protein. The biological activity of non-fractionated extract showed ORAC and iACE results of 530 μ mol TE/g of extract and an IC of 200 μ g protein/mL, respectively. The showed ORAC results of 597 μ mol TE/g of extract. So, due to its protein richness and interesting bioactivities, *Senedesmus obliquus* extracts may have potential to be used in food and cosmetic industries.