

Quantification and Identification of the Main Components of the Biomass of the Microalgae *Scenedesmus* SP. - Prospection of Molecules of Commercial Interest

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Abstract : To develop the massive cultivation of microalgae, it is necessary to isolate and characterize the species, improving genetic tools in search of specific characteristics. Therefore, the detection, identification and quantification of the compounds that compose the *Scenedesmus* sp. were prerequisites to verify the potential of these microalgae. The main objective of this work was to carry out the characterization of *Scenedesmus* sp. as to the content of ash, carbohydrates, proteins and lipids as well as the determination of the composition of their lipid classes and main fatty acids. The biomass of *Scenedesmus* sp, showed $15,29 \pm 0,23$ % of ash and CaO (36,17 %) was the main component of this fraction, The total protein and carbohydrate content of the biomass was $40,74 \pm 1,01$ % and $23,37 \pm 0,95$ %, respectively, proving to be a potential source of proteins as well as carbohydrates for the production of ethanol via fermentation, The lipid contents extracted via Bligh & Dyer and in situ saponification were $8,18 \pm 0,13$ % and $4,11 \pm 0,11$ %, respectively. In the lipid extracts obtained via Bligh & Dyer, approximately 50 % of the composition of this fraction consists of fatty compounds, while the other half is composed of an unsaponifiable fraction composed mainly of chlorophylls, phytosterols and carotenes. From the lowest yield, it was possible to obtain a selectivity of 92,14 % for fatty components (fatty acids and fatty esters) confirmed through the infrared spectroscopy technique. The presence of polyunsaturated acids (~45 %) in the lipid extracts indicated the potential of this fraction as a source of nutraceuticals. The results indicate that the biomass of *Scenedesmus* sp, can become a promising potential source for obtaining polyunsaturated fatty acids, carotenoids and proteins as well as the simultaneous obtainment of different compounds of high commercial value.

Keywords : microalgae, *Scenedesmus*, lipid classes, fatty acid profile, proteins, carbohydrates

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