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ASSESSMENT OF ANTIOXIDANT AND ANTIBACTERIAL ACTIVITIES OF ALGAL RESIDUES AND BREWER'S YEAST

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The growing concern for the environment and the adoption of the circular economy model have driven the search for innovative solutions for the valorization of agro-industrial residues. In this context, brewer's yeast and algal biomass represent promising sources of bioactive compounds with potential applications in several areas, such as food, pharmaceuticals, and cosmetics. The utilization of these residues not only contributes to mitigating environmental impacts but also adds value to by-products that would otherwise be discarded, promoting a more sustainable production cycle. For the present study, residues of the algae *Hypnea musciformis* and *Sargassum filipendula* were kindly provided by ASSESSA, while residual yeasts were obtained from the production of Ale beer (Angel A-01, *Saccharomyces cerevisiae*) and Lager beer (W 34/70, *Saccharomyces pastorianus*) supplied by Colonus Brewery (RJ). The objective of this study is to evaluate the antioxidant and antimicrobial potential of extracts from algal and brewer's yeast residues, aiming valorization as high-value-added ingredients, especially as cosmetics and biosurfactants products. Initially, proximate composition analysis was performed to identify the components of the residues in addition to the total phenolic content, that was determined using the Folin–Ciocalteu method. Subsequently, the residues were frozen, lyophilized and extracted with three different solvent systems: distilled water, 70% ethanol, and rhamnolipid. As results, proximate composition revealed high levels of carbohydrates and proteins in the residues analyzed, supporting their valorization not only as sources of compounds with antioxidant and antibacterial activity, but also as substrates in biotechnological processes. The three extracts obtained are being analyzed concerning their chemical composition by UHPLC-DAD-MS/MS. In the next step, antioxidant activity of the extracts will be assessed *in vitro* using the DPPH, FRAP, and ABTS assays and the antimicrobial activity will be evaluated through the broth microdilution method to determine the Minimum Inhibitory Concentration (MIC) against the anaerobic bacterium *Cutibacterium acnes* that causes acne. The authors gratefully acknowledge ASSESSA and Colonus Brewery for providing the biological materials, and CAPES, CNPq, and FAPERJ for financial support.

Palavras chave: *Sustainability, Cosmetics, Algal residues, brewer's yeast, antioxidante and antibacterial activities*