Evaluation of the Potential of Using Dunaliella salina Microalgae Biomass Associated With the Flavonoid Hesperidin Extracted From Citrus sinensis Orange Peels Waste as a Sustainable Alternative for Supplementation of Beef Cattle

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Cattle breeding and feeding requires large areas of pasture and is dependent on climate and designed soil. The use of supplementation is often necessary and in general the agroindustrial residues and additives that are used for this purpose have an impact on animal food safety. Seeking the formulation of an alternative supplement that is safe, sustainable and that addresses the nutritional and functional requirements of beef cattle, we evaluated the biochemical potential of the biomass of the microalgae Dunaliella salina in association with the flavonoid hesperidin, that reduces oxidative stress given its antioxidant activity. To this end, we cultivated and extracted the microalgae biomass and performed the biochemical analysis of its proteins, lipids, carbohydrates, phenolics and total ash. Then we extracted the hesperidin and analyzed its purity by HPLC. Finally we developed a prototype using a binding agent and analyzed its humidity. The results obtained revealed efficient levels of proteins (25.7% ± 0.42), lipids (18.5% ± 0.06) and carbohydrates (28.5% ± 0.71), including the presence of phenolics 2, 16 ± 0.21 (mg GAE 100 g-1DW). The high purity content (81%) of hesperidin demonstrates the quality of the extracted compound. The association of raw materials presented synergy, resulting in a fluid and malleable combination, essential characteristics for extrusion of the supplement into pellets. The obtained results revealed the promising biotechnological potential of biomass associated with hesperidin as a supplement designed to meet the nutritional needs of animals in a safe and sustainable way.

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