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Effect of carbon to nitrogen ratio in the growth of *Schizochytrium limacinum* towards DHA production

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Docosahexaenoic Acid (DHA) is linked to brain and sight development in children. Many children in Colombia do not have access to diets containing these essential nutrients. To improve this condition, it is necessary to explore different sources for DHA. In recent years, *Schizochytrium limacinum* SR21 has emerged as an alternative to the production of DHA; nevertheless, this way of productions is still underdeveloped. To cope up with this necessity, we are studying the conditions under which SR21 yields increase by varying carbon to nitrogen ratio, as well as, lowering production costs for this technology. Varying the carbon to nitrogen ratio allows finding the best conditions under which biomass and lipid induction happen, this is important given that *S. limacinum* is not endemic to Colombia; therefore, it is necessary to establishing the optimum conditions for the region. Initially, we evaluated a constant carbon (glucose) concentration of 50g/L varying nitrogen (yeast extract) concentrations in C:N ratios of 5:1, 15:1, 25:1, and 35:1 respectively in a 6 day fermentation at 23°C and 160 rpm. After analyzing the data, we found that the 5:1 ratio yielded 38g/L DCW although the growth was slow and we did not reach the stationary phase, 25:1 ratio showed the overall best conditions with 26g/L DCW in 120 hours. The next step in the study will be to optimize the conditions for lipid induction and profiling the oil to characterize the DHA produced in the fermentation process. These results are very promising for further up scaling and production of a nutraceutical food for children enriched with DHA. Microalgae are a great candidate to shift the production of DHA from fish capture to renewable sources; moreover, new biotechnological sources for producing DHA will facilitate the access of these nutrients to children in Colombia

Biography

Juan Martin Delgado is a Food Engineer and did his MSc in Engineering from Universidad de Antioquia, Colombia. He is part of Bioprocess Research Group. At this moment, he is leading the development of Biotechnology applied to Food Science. He has experience as a Food Safety Consultor, as well as in the fields of alternative uses of fish wastes, fish silage, bromatological analysis, and microalgae culture. His passion is to find new ways to use biotechnology to solve the alimentary needs of children in Colombia.

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