

## Applied research in biotechnology to improve the Competitiveness of the fish chain in Colombia

Carlos Ocampo-López, Margarita Ramírez-Carmona, Leidy Rendón-Castrillón, Rubén Giraldo-Aristizabal

Universidad Pontificia Bolivariana – Faculty of Chemical Engineering, Colombia



### Abstract

In developing countries like Colombia, most of the food used in the different stages of fish farming production is imported. These foods have a high ecological footprint since they include phosphorus, potassium and nitrogen salts, as well as medicines for disease control, causing strong impacts to water sources through eutrophication processes. Additionally, the associated costs of these inputs represent between 50-60% of the total production costs for fish farmers. To improve the competitiveness of the fish chain in Colombia, and especially Antioquia, a biotechnological process to produce Spirulina microalgae was designed and implemented, as a raw material for feeding fish, creating a new industry. The process developed a prototype that reduces operating costs using solar energy and a technology that allows the use of microalgae as a sustainable food source. The proposed value of technology involves a compact system, low implementation costs of each production system, ease of operation and maintenance, as well as few hours of dedication per day to the process. To empower communities and achieve economic growth based on green chemistry, a virtual training program in biotechnology is simultaneously being developed, which includes courses in bioprocesses, environmental biotechnology, alternative energy, and bio-entrepreneurship. With this contribution, the academy integrates with farmers to strengthen the social economy and give sustainability to the project in the long term.

### Biography

Carlos Ocampo-López is professor and researcher in biotechnology and process engineering at Universidad Pontificia Bolivariana, Colombia. He is Chemical Engineer and holds a Ph.D. in engineering. He was invited researcher at McGill University in Montreal (Canada), Universidad Politecnica de Valencia in Valencia (Spain) and Universidade de São Paulo in São Paulo (Brazil) He has over 50 scientific and technical publications, and 2 patents for new inventions. He is graduated in technology commercialization from The University of Texas (US) and has been serving as scientific advisor for United Nations Environment Program (UNEP) in the area of green and sustainable chemistry.

### Publications

1. C Ocampo-López, S Colorado-Arias, M Ramírez-Carmona, Journal of applied research and technology 2015, 13 (5), 498-503
2. JJD Martínez Arboleda, M Torres-Taborda, H Alzate Gil, C Ocampo-López, Formación universitaria, 2016, 9 (2), 41-48
3. C Ocampo-López, ME Ramírez-Carmona, E Vélez-Ortiz, Cerámica, 2013, 59 (350), 326-330
4. MJ Betancur, F Martínez, C Ocampo, JA Moreno, G Buitrón, ...Simulation Modelling Practice and Theory, 2009, 17 (4), 680-691
5. J Jiménez-Llanos, M Ramírez-Carmona, L Rendón-Castrillón, ...International Journal of Hydrogen Energy, 2020, 45 (15), 8310-8328

9<sup>th</sup> World Congress on Green Chemistry and Green Energy, Prague, Czech Republic, 20-21 July, 2020

**Citation:** Carlos Ocampo-Lopez, *Applied research in biotechnology to improve the competitiveness of the fish chain in Colombia*, Green Chemistry 2020, 9<sup>th</sup> World Congress on Green Chemistry and Green Energy, Prague, Czech Republic, 20-21 July, 2020, 07