



## Enhancement of seaweeds-derived bioactive compounds via Interactive Aquaculture

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### Abstract:

Marine macroalgae (also-called seaweeds) are among the most important cultivated marine organisms and have a variety of applications in human wellbeing. As ancient organisms, which lack an immune system, seaweeds rely instead on highly effective chemical defense and bioactive components reservoir to acclimate to the stressful, fluctuating marine environment. Common chemicals from seaweeds include proteins, polysaccharides, n3 fatty acids, vitamins, pigments as well as secondary metabolites such as mycosporine-like amino acids, phenols, and terpenes. Their extracts exhibit a positive response against chronic diseases in humans and possess antioxidant, sun-screening, anti-cancer, along with anti-diabetic properties. Today, there is a growing market need to ensure consistent supply of seaweed biomass that contains high levels of desirable bioactive compounds. This requirement is derived from the lack of knowledge in suitable cultivation methods and techniques. Our research focused on implementing a novel, ecological sound, integrated multi-trophic aquaculture (IMTA) system design, which advocates the integration of fed fish with extractive species such as seaweeds. We cultivated several seaweed species next to fish and exposed them to various abiotic stress conditions. The aim was to present a method, which enhances and stimulates the production of valuable compounds in seaweeds, including sun-screening materials, protective pigments, and natural antioxidants. The design has shown excellent results, increasing to levels of the targeted bio-compounds in the seaweed tissue by several orders of magnitude. This multidisciplinary research project is expected to lead novel practical biotechnological and environmental advantages, and has a strong impact on the aquaculture, food, and pharma sectors worldwide.



### Biography:

Doron Ashkenazi is a PhD student at the Department of Zoology, Tel Aviv University, and the Israel Oceanographic and Limnological Research Institute, Haifa, Israel. He works under the supervision of Prof. Avigdor Abelson and Prof. Alvaro Israel. Doron is a young, very enthusiastic marine researcher specializing in seaweeds aquaculture, ecology, and biotechnology. His research on a novel seaweed IMTA design was published in "Reviews in Aquaculture" (IF: 7.77). Doron received scholarships of excellence and honor from the Israeli Ministry of Agriculture and from the Israeli Oceanography Association.

He believes in the greater good and love, and advocates peace between peoples.

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