

Applied Research

Biotechnology, Environment & Basic Medical Sciences

Scientific Committee

Research Work Title

Investigation and development of pharmaceuticals from marine organisms



Researcher

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Country

The Republic of Korea
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Field

Marine Biotechnology

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Abstract

While more than 80% of living organisms are found in marine ecosystems, only less than 5% of the marine resources have been utilized as human food materials. Nutritional properties of fish, shellfish, algae and marine microorganisms are generally well known. However, their functional characteristics have not been fully revealed. It is believed that they contain biologically active compounds including potential nutraceuticals. For example, marine macroorganisms produce a vast array of secondary metabolites including terpenes, steroids, polyketides, peptides, alkaloids, porphyrins and polysaccharides. These secondary metabolites serve many biopharmaceutical purposes (antioxidant, antitumor, anti-inflammation, anti-allergy, antifungal, anti-HIV, and antihypertensive). However, development of a new drug requires sufficient amounts of pure compounds that exceed by large quantities, but it is extremely difficult to collect them in higher amounts from a marine environment. If the compound of interest was originally isolated from a bacterium, fungus, or microalga, the organisms could be cultured at a large scale by fermentation. With limits for the recovery of natural bioactive compounds from different resources, molecular biological and genetic approaches should be integrated as standard husbandry practices that play an increasingly important role in the enhancement of production efficiency of bioactive substances through biotechnological improvement of the transformed microorganism species.

Biography

Prof. Se-Kwon Kim is presently working as a distinguished professor in Hanyang University, South Korea. He worked as a distinguished professor at the department of Marine Bio Convergence Science and Technology and is the director of Marine Bioprocess Research Center (MBPRC) at Pukyong National University, Busan, South Korea. He received his M.Sc. and Ph.D. degrees from Pukyong National University and conducted his postdoctoral studies at the Laboratory of Biochemical Engineering, University of Illinois, Urbana-Champaign, Illinois, USA. Later, he became a visiting scientist at the Memorial University of Newfoundland and University of British Columbia in Canada. Dr. Kim served as the president of the 'Korean Society of Chitin and Chitosan' in 1986-1990, and the 'Korean Society of Marine Biotechnology' in 2006-2007. In addition, he is a board member of the International Society of Marine Biotechnology Associations (IMBA) and International Society of Nutraceuticals and Functional Food (ISNFF). His major research interests are investigation and development of bioactive substances from marine resources. His immense experience in marine bio-processing and mass-production technologies for marine bio-industry is a key asset for undertaking majorly funded Marine Bio projects in South Korea. To date, he authored 650 research papers, 70 books, and 120 patents.

