Xenobiotics in Aquaculture

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[2] *Department of Marine Biotechnology and Resources, National Sun Yat-sen University, Kaohsiung 80424, Taiwan, R.O.C.; NSYSU.Office phone: 07-312-1101-2695, CP: 0974-100-275nstitute Name, Country*

Humans have exploited oceanic resources throughout history in multiple ways. The oceans serve for transport, contain a vast number of principle information from physical, geological, chemical and biological/genetic origin that are exploited for technological applications in the industry.Oceans drive weather and climate issues and together with marine life biogeochemical cycles, and ecosystem services. At the same time, marine ecosystems are increasingly exposed to multiple stressors such as physical (e.g., electromagnetic radiation, electricity, hydrodynamics) chemical (e.g., organic or inorganic, nanoparticles, plastics), physico-chemical (pH), biological stressors (biotoxins, competition, predation, parasites/pathogens), or global change issues of warming, acidification, freshening, de-oxygenation, species invasion, and the spread of pathogens. Such oceanic disturbances can cause death, metabolic malfunction, genetic and phenological damage. If such impacts are sublethal, they will lead to fitness changes. Depleted numbers of sensitive species are causing a decrease in biodiversity and a loss of ecosystem functioning due to alterations in habitat, food chains, and productivity patterns. Global change research has so far mainly focused on the short-term physiological and ecological consequences of anthropogenic disturbances leaving out the potential of populations and communities for adaptation. At the same time does rapid progress in remote sensing and -omics approaches enable our better understanding of fundamental molecular responses to stressors and their combination with global change threats. Prospective scenarios of future oceans in times of combined traditional and global change stress will further be exemplified here using shallow hydrothermal vents as natural laboratories.

Keywords—Bioaccumulation, Biomagnification, Biotoxins, Emerging contaminants

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