**THE IMPACT OF GLOBAL CLIMATE CHANGE ON THE DISTRIBUTION OF PATHOGEN BACTERIA IN THE SEAS**

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Microorganisms are the only living species in the globe that can live anywhere other creatures live, and also in environments with extreme environmental conditions. The seas are home to natural-environment bacteria that find life in ecosystem cycles with the decomposition of organic matter, as well as pathogen bacteria that enter the environment based on human-based activities. It is known that climate change forces the species to adapt, migrate, take their place or extinction. However, the interactions of microorganisms with climate change have not been much of an issue so far. In terms of the sustainability of marine ecosystems and global health, it is necessary to define not only how microorganisms affect climate change, but also how microorganisms are affected by climate change and other human activities.

Studies we have conducted in the Turkish Seas since 2000 show the dominant presence of pathogen bacteria in coastal areas, and natural environment bacteria in the oligotrophic areas. Ocean warming, acidification, eutrophication, and habitat destruction are the effects of host-pathogenic bacteria on the spread of diseases depending on specific factors. As with the pathogenic Vibrio species that find life in the sea, in some water-borne infections, the spread toward the poles is correlated to the reduction in salinity of the water environment on the beaches due to rising rains due to global climate change. These changing conditions can improve the development of other pathogens as in Vibrio types. Similar findings are also available for Salmonella types. The pathogen bacteria are heavily affected by climate changes caused by large-scale climate events that disrupt the normal rainfall, including infectious diseases caused by many pathogen bacteria and water-borne diseases, and cause temperature changes in about two-thirds of the world every few years.

The pathogen bacteria in the sediment are exposed and multiplied by heavy rainfall. Especially those pathogens that are transmitted orally can be mixed in drinking water due to heavy rain. To better understand the spread of diseases and develop effective control strategies, we need to be familiar with the ecology vectors of pathogens and the impact of environmental factors. While natural and experimental microbial populations are examined in terms of adaptation mechanisms and results, the adaptation of species to their environment is less researched for microorganisms compared to animals and plants.

The different stress responses developed by microorganisms based on high diversity and regional conditions make it difficult to identify their roles in the ecosystem. Revealing the geographical differences of microbiological responses is necessary to identify bacterial roles in marine ecosystems. Our studies in the Turkish Seas show the regional metabolic differences, resilience characteristics, and distributions of bacteria. To prevent new negatives of the current bacteriological situation detected due to global climate change, it is necessary to focus on data on compositions of microbial communities, metabolic functions, regional mutations associated with eutrophication, and to make global comparisons.

This study draws attention to the microbial communities that form the biosphere's life support system, providing examples of regional changes of pathogen bacteria data from the Turkish Sea, and presented ways to respond to the global climate change of processes related to microorganisms. This study contributes to the importance of the correct evaluation of the response to the stress factors of bacteria that contribute significantly to the breathing of the seas and the circulation of many elements to create a healthy environment in the future.

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