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Commentary

Role of microorganisms in aquatic sources

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Accepted 09 September , 2021

INTRODUCTION

Water microbiology the name itself defines it consists of the microorganisms that live in water, whereas microorganisms not only live in water but also in different terms and forms such as air, soil, food even on the surface of our bodies these microbes, as some of them are critical to the survival and survival of life on Earth. It is transported from one natural environment to another. In water microbiology, water supports the growth of many types of microorganisms. This can be advantageous (such as chemical activities of yeast strains provide us with bread and beer. As well, the growth of some bacteria in contaminated water can help digest the poisons from the water) as well as disadvantageous. (Such as Typhoid fever is an infection that spreads through contaminated water).

Microbes that cause other diseases in water, that is life-threatening and even unhealthy. For example, bacteria that live in human intestinal tracts, such as *E. coli*, *Salmonella*, *Vibrio*, can contaminate water if feces enters the water. Drinking water gets contaminated with a type of *E. coli* known as O157:H7 can be fatal. A case was reported of the contamination of the municipal water supply of Walkerton, Ontario, Canada in the summer of 2000 by strain O157:H7 sickened 2,000 people and killed seven people. Not only are human beings affected by the microorganism but also the animals. The intestinal tract of warm-blooded animals contains bacteria such as *Escherichia coli*, *Salmonella*, *Shigella*, and *Vibrio* can contaminate water if feces enter the water. These animals also consist of viruses that can contaminate water and cause disease. Examples include rotavirus, enteroviruses, and coxsackievirus.

The most important form of microbes that concerns in water microbiology is protozoa. Protozoa are two types they are *Giardia* and *Cryptosporidium*. They live in the intestinal tract of animals such as deer and beaver. *Cryptosporidium* and *Giardia*

are called cysts because they are formed passive and hardy during their life cycles. Cyst forms are resistant to chlorine, it is the most popular form of drinking water disinfection, and can pass through the filters used in many water treatment plants. If they are ingested in drinking water they can cause debilitating and prolonged diarrhea in humans and can be life-threatening to people with impaired immune systems.

Various types of microorganisms are found naturally in saltwater and freshwater. Like cyanobacteria, bacteria, algae, protozoa, and small animals such as rotifers. These help in the food chain that forms the life in the water. For example, cyanobacteria can convert the energy of the sun into the energy it needs to live. Algae which occur in water are also an important food source for other forms of life. The region of water body in freshwater, near the shoreline is shallow, lighted, and warmer than other regions. Bacteria and photosynthetic algae use the light form as energy vigorously in this zone. Saltwater has a different environment to microorganisms. As high salt concentration, high pH, and low nutrients, relative to freshwater, they are harmful to many microorganisms. Halophilic Bacteria are in huge numbers near-surface, and some bacteria that also live in freshwater are plentiful (i.e., *Pseudomonas* and *Vibrio*). Another form of microorganisms found in saltwater is algae are known as dinoflagellates. The fast growth and repeated addition of dinoflagellates can turn the water red. It leads to the death of fish. Humans also become ill by eating contaminated fish.

The ideal means of transport of microorganisms from one place to another is through the water. For example, Ships during their ocean voyages water is carried in hulls of ships to stabilize vessels, are now known to be a means of transporting microorganisms around the globe. *Vibrio cholera*, a bacterium cause's diarrhea life-threatening to humans.

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