



Probiotics – Boon for Aquaculture

The word probiotic is derived from the Greek, meaning “for life”, and has acquired several meanings over the years. It is a term used to describe substances secreted by one organism that stimulate the growth of another. It thus meant the exact opposite of antibiotic. In another words organisms and substances which contribute to intestinal microbial balance are known are probiotics. This definition relates probiotics to the intestinal microflora. Thus, probiotics is a live microbial feed supplement that beneficially affects the host animal by improving its intestinal microbial balance. The live-culture of natural and beneficial *Bacilli* can be introduced into an animal gut in massive numbers to supplement those already present. The increasing level of beneficial organisms in the gut can crowd out the existing pathogens by their proliferation and establishment in the gut. The recent definition of probiotics is given as a viable mono or mixed culture of organisms which, when applied to animals or man beneficially affects the host by improving the properties of indigenous flora.

Probiotics are of two types: (i) Feed probiotics – they are administered through artificially prepared pelleted feed and (ii) Water probiotics/water additives – they are applied directly to the water surface as a part of water quality management.

Probiotics used in aquaculture increase the growth rate; help to maintain the water quality; increase the survival rate during the hatchery operation; stimulate non-specific immunity by promoting production of vitamins, thereby increasing the host's resistance to various diseases and suppress the growth of harmful bacteria such as *Vibrio* sp.

Water probiotics is a new concept that can be applied to the concept of probiotics, in a broad sense and comprises living microbial preparations used to treat the aquaculture ponds. When these additives are added directly to the culture water, they modify the microbial composition of the water or pond sediments and eliminate or minimise the pathogens. The probiotics used in aquaculture are: *Lactobacillus thermophilus*, *L. halveticus*, *L.*

plantarum, *L. bulgaricus*, *Streptococcus lactis* and *Vibrio alginolyticus*.

According to the recent concept of water additives the bacteria attempted to treat the aquaculture pond to restore the water quality include: Ammonia oxidisers, *Nitrosomonas europea*, *Nitrocystis javanicus*, *Nitrospira briensis*, *Nitrocystis oceanicus* and *Nitrosolobus multiformis*; and Nitrate oxidisers, *Nitrobacter winogradskii*, *N. agilis*, *Nitrococcus mobilis* and *Nitrospira gracilis*. *Aerobacter* spp. are used for decomposition of hydrocarbons, *Bacillus subtilis* for decomposing lipids and carbohydrates and *Cellulomonas* spp. for decomposing cellulose.

Commercial products available in the market are: Super- P.S, Environ- A.C, Biogreen, etc. (water probiotics) and Aqualact, Spilac, Biotrix, etc. (feed probiotics). (Contributed by: **Shyam S Salim, K Vijula and Simi Rose Andrews**, Central Institute of Fisheries Education, Fisheries University Road, Versova, Mumbai-400061; E-mail: shyam_scientist@rediffmail.com.).