

# Effects of dietary exopolysaccharide (EPS) from *Bacillus altitudinis* on growth performance, innate immunity, and disease resistance of Nile tilapia (*Oreochromis niloticus*)

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## Abstract

Aquaculture is one of the fastest-growing food producing sectors, providing almost 50% of all fish for human consumption. Bacterial induced the diseases is a major issue to block the sustainable development of aquaculture. Antibiotics treatment is usually used in the fish farming to prevent disease outbreaks or for therapeutic purpose. However, abuse of antibiotics not only cause of environmental pollution, but also cause risk of human food safety. Exopolysaccharides (EPS) as immunostimulants is a popular prophylactic strategy for disease control in aquaculture. In the present study, *Bacillus altitudinis* was compared to *Bacillus subtilis* as potential EPS. *B. altitudinis* has potential as EPS based on purity. The effect of medium containing different carbon source on EPS production from *B. altitudinis* were evaluated. The results showed that fructose is the best carbon source for producing EPS compared to other carbon sources. Moreover, medium supplemented fructose as carbon source can obtain the purity of EPS more than 90%. The EPS from *B. altitudinis* was assumed to have efficacy on improvement of growth, innate immunity, gut microbiota and disease resistance by administrating the EPS for 8 weeks. If the hypothesis was validated, it is mean that EPS from *B. altitudinis* can be used as potential functional feed additive to stimulate growth and immune responses in tilapia aquaculture.

**Keywords:** exopolysaccharide (EPS), growth performance, innate immunity, disease resistance

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