



Effect of dietary probiotic *Lactobacillus plantarum* on intestinal microbiota and digestive enzyme activity of narrow clawed crayfish (*Astacus leptodactylus*, Eschscholtz).

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Abstract:

In this study we evaluated the effects of different levels of dietary *Lactobacillus plantarum* including 10^7 (LB7), 10^8 (LB8) and 10^9 (LB9) CFU g^{-1} diet on intestinal microbiota as well as digestive enzyme activity of narrow clawed crayfish (*Astacus leptodactylus*). Briefly, 120 crayfishes (27.88 ± 0.27) randomly distributed into 12 fiberglass tanks (10 crayfish per tank). Crayfish fed with different *L. plantarum* experimental diets for 97 days two times a day (9 am and 4 pm) at the rate of 1.5 % of body weight. At the end of the feeding trial, microbiological assessments revealed that total autochthonous intestinal heterotrophic bacteria counts (TVC) remained unaffected in different treatments. Nevertheless, autochthonous lactic acid bacteria (LAB) levels were significantly elevated in all *L. plantarum* supplemented groups with the highest levels in LB8 and LB9 treatments. However following the replacement of *L. plantarum* supplemented diet with the basal diets, no autochthonous LAB detected in LB7 and LAB count reduced in LB8 and LB9 groups. The crayfish fed with LB8 and LB9 supplemented diets demonstrated higher digestive enzyme activity (protease, amylase and alkaline phosphatase (ALP)) compared to the other groups. Regardless of the inclusion levels, lipase activity increased significantly in all the probiotic-supplemented diets. Our results confirm the potential of *L. plantarum* as dietary probiotic on intestinal microbiota and digestive enzyme activity of *A. leptodactylus*.

Keywords: Clawed crayfish, dietary probiotic, *Lactobacillus plantarum*