

Zinc-threonine enriched yeast improved the growth and mineral composition of marine rotifer, *Brachionus plicatilis*

Nematzadeh K.¹; Ahmadifard N.^{1*}; Samadi N.²; Agh N.³;
Ghaderpour S.¹

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Abstract

Growth and survival rate in the larval stages of marine fish are influenced by the live feeds. Different methods were used for enrichment of the live feeds with vitamins and fatty acids, however, those methods cannot be used for soluble materials such as zinc. So, in this research, the effects of zinc-threonine enriched *Saccharomyces cerevisiae*, on growth factors and mineral composition of marine rotifer, *Brachionus plicatilis* was investigated. For this purpose, rotifers in four groups including: 1) yeast without enrichment (the control), 2) yeast containing 18.22 mg g⁻¹ of zinc 3) yeast containing 23.76 mg g⁻¹ of zinc and 4) yeast containing 46.15 mg g⁻¹ of zinc were cultured for 10 days. Based on results, in group with 46.15 mg g⁻¹ of zinc-threonine the specific growth rate (SGR) and mineral composition of rotifers significantly improved ($p < 0.05$). Maximum number of rotifers and eggs were 219.3±2.0 and 30.3±11.0 number mL⁻¹, respectively. The eggs ratio (the number of eggs/total number of female rotifers) and SGR is related to the group of 23.76 mg g⁻¹ and 46.15 mg g⁻¹ of zinc-threonine, respectively. Highest amount of zinc in treatment 4 was 977± 4.99 mg kg⁻¹ of rotifers. Also the amount of Cu in treatment 4 was significantly higher than other groups. Conversely, by increasing zinc content, other ions levels like Fe and Mn were significantly decreased ($p < 0.05$). In conclusion, zinc-threonine enriched yeast could improve the growth, reproduction and mineral composition of marine rotifers, *Brachionus plicatilis*.

Keywords: Yeast, *Saccharomyces cerevisiae*, Zinc-threonine, Mineral composition, Rotifer, *Brachionus plicatilis*

1-Department of Fisheries, Faculty of Natural Resources, Urmia University, P.O. Box: 46414-356, Urmia, Iran

2-Department of Analytical and Physics and Applied Chemistry, Faculty of Chemistry, Urmia University, Urmia-Iran

3-Department of Artemia, Artemia and Aquaculture Institute, Urmia University, Urmia, Iran

*Corresponding author's Email: n.ahmadifard@urmia.ac.ir