

文章摘要

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3种品系尼罗罗非鱼 (*Oreochromis niloticus*) 盐碱耐受性和生长比较

The Tolerance and Growth of Three Strains of *Oreochromis niloticus* in Salinity-Alkalinity Water

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英文关键词: *Oreochromis niloticus* Salinity-alkalinity treatment 96 h median lethal concentration Average growth rate

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中文摘要:

为评估尼罗罗非鱼的耐盐碱性能, 分别测定了上海、山东、河北3种品系尼罗罗非鱼鱼种96 h的半致死盐、碱度, 并在不同盐碱混合浓度 (S0A0、S10A0、S10A2、S10A4、S10A6) 中进行为期60 d的养殖生长比较。单盐、单碱耐性研究表明, 上海、山东、河北3种品系尼罗罗非鱼鱼种的96 h半致死盐度分别为18.528 g/L、20.347 g/L、19.342 g/L, 96 h半致死 $\text{NaHCO}_3$ 碱度为8.827 g/L、8.540 g/L、8.542 g/L。盐碱混合条件下, 盐度为10时, 96 h半致死碱度分别为河北品系 (4.377 g/L) > 上海品系 (3.561 g/L) > 山东品系 (3.108 g/L), 品系之间差异显著 ( $P < 0.05$ ); 盐度为15时, 96 h半致死碱度分别为河北品系2.144 g/L, 上海品系2.183 g/L, 山东品系2.183 g/L, 品系之间无显著差异 ( $P > 0.05$ ), 高盐度下尼罗罗非鱼鱼种的碱度耐受性明显低于低盐度下的碱度耐受性。结果表明, 尼罗罗非鱼日均增重率在S0A0、S10A0组间无显著差异 ( $P > 0.05$ ), 随着盐碱浓度增加, 盐碱S10A4和S10A6组中日均增重率呈下降趋势, 河北品系表现出相对生长优势 ( $P < 0.05$ )。研究结果为尼罗罗非鱼适宜养殖的盐碱范围的确定、耐盐碱品系的筛选提供了基础资料。

英文摘要:

The breeding of fish species that tolerate saline-alkaline is of great importance in the usage of salinity-alkalinity water bodies and in the sustainable development of aquaculture industry. Due to their fast growth rate and excellent adaptability to different environments, Nile tilapia *Oreochromis niloticus* could be a good candidate for the saline-alkaline tolerance breeding. In this study we evaluated the tolerance and growth performance of three strains of juvenile Nile tilapia (Shanghai, Shandong and Hebei strains) in salinity-alkalinity water. During a 60-day culture experiment we compared the average growth rates of the three strains in different salinity-alkalinity water (S0A0, S10A0, S10A2, S10A4, and S10A6) and their median lethal salinity/alkalinity concentrations. The results showed that in the 96 h culture, the median lethal salinities for juvenile Shanghai

their median lethal saline/alkaline concentrations. The results showed that in the 96 h culture the median lethal salinities for juvenile Shanghai, Shandong, Hebei strain were 18.528 g/L, 20.347 g/L, and 19.342 g/L respectively; the median lethal NaHCO<sub>3</sub> alkalinities were 8.827 g/L, 8.540 g/L, and 8.542 g/L respectively. For mixed salinity-alkalinity test, at salinity 10 the 96-h lethal alkalinity was 4.377 g/L for Hebei strain, 3.561 g/L for Shanghai strain, and 3.108 g/L for Shandong strain; at salinity 15, it was 2.144 g/L for Hebei strain, 2.183 g/L for Shandong strain, and 2.183 g/L for Shanghai strain ( $P>0.05$ ). The alkaline tolerance of Nile tilapia at high salinity was significantly lower than that at low salinity ( $P<0.05$ ). The growth experiment results showed that there was no significant difference in the average growth rate between S0A0, S10A0 and S10A2. However, the average growth rate decreased at S10A4 and was significantly lower at S10A6 ( $P<0.05$ ). Hebei strain showed a higher growth rate than Shanghai and Shandong strains at S10A2, S10A4 and S10A6 ( $P<0.05$ ). Our results should provide important clues about the suitable salinity and alkalinity of the culture water bodies and about the selected breeding of Nile tilapia.

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