文章摘要

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低盐胁迫对三疣梭子蟹鳃和肝胰腺显微结构及家系存活的影响

Effects of low salinity stress on microstructure of gill and hepatopancreas and family survival rate of Portunus trituberculatus

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中文关键词: 三疣梭子蟹 盐度 存活率 鳃 肝胰腺 显微结构

英文关键词: Portunus trituberculatus Salinity Survival rate Gill Hepatopancreas Microstructure

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中文摘要:

在实验生态条件下研究了低盐环境对三疣梭子蟹鳃丝和肝胰腺显微结构、家系存活率的影响。研究结果表明，低盐（15.0、13.0、11.0、9.0）胁迫能够诱导鳃丝和肝胰腺显微结构改变。盐度15.0时，上皮层变薄，B细胞数量增多；盐度13.0时，鳃丝不规则增厚，B细胞数量进一步增多，肝小管中的R细胞的数量减少，柱状上皮细胞的细胞质内出现许多空泡；盐度11.0时，上皮层出现解体，鳃腔中的血细胞明显增多，肝细胞空泡化现象更为严重；盐度9.0时，上皮层破坏直至解体，B细胞中转运泡数量增多，体积增大，细胞结构损伤严重。以72 h的低盐半致死盐度(LD50=11.1)为评价指标，检测24、48和72 h共计10个家系对低盐的耐受性。各家系对照组（盐度35.0）在实验期间均未出现死亡现象，而在低盐胁迫条件下，随着时间的逐渐延长，各家系的存活率均呈下降趋势，24，48和72 h的存活率变化范围分别在64.44%~80.00%，50.00%~68.89%和33.33%~60.00%之间。各家系72 h时的存活率大小顺序为J10＞J4＞J9＞J5＞J7＞J3＞J6＞J2＞J8＞J1，均显著低于各自的对照组（P<0.05）。

英文摘要:

The effects of low salinity on microstructure of gill and hepatopancreas and family survival rate of Portunus trituberculatus were studied. The results showed that low salinity (15.0, 13.0, 11.0 and 9.0) stress can induce change in microstructure of gill and hepatopancreas. At salinity of 15.0, the epithelium thinned slightly, more B cells appeared in hepatopancreas tubules; At salinity of 13.0, gill filament thickened irregularly, the number of B cells increased while R cells decreased, and many vacuoles appeared; At salinity of 11.0, disintegration of the epithelium was observed, haemocytes cells increased in gill cavity and vacuoles increased; At salinity of 9.0, epithelium were destroyed, even disassembled seriously, the number of vesicle shuttle in B cells increased and their volume enlarged, and the structure of hepatocytes damaged seriously. Using the semi-lethal low salinity for 72 h

obtained from earlier experiment (LD50=11.1) as the evaluation index, low salinity tolerance of ten families at 24 h, 48 h and 72 h were determined. No mortality was observed in the control treatments during the experiment period. But the survival rate of the ten families decreased over time under low salinity stress, which was 64.44%~80.00%, 50.00%~68.89%, and 33.33%~60.00% at 24 h, 48 h and 72 h, respectively. The ranking of survival rate of the ten families at 72 h was J10＞J4＞J9＞J5＞J7＞J3＞J6＞J2＞J8＞J1, which were significantly lower than their respective control ($P < 0.05$).

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