应用生态学报 » 2011, Vol. 22 » Issue (04): 1059-1066 DOI:

低盐度胁迫对银鲳幼鱼肝脏抗氧化酶、鳃和肾脏ATP酶活力的影响

尹飞,孙鹏,彭士明,施兆鸿

中国水产科学研究院东海水产研究所农业部海洋与河口渔业重点开放实验室, 上海 200090

Effects of low salinity stress on the antioxidant enzyme activities in juvenile *Pampus argenteus* liver and the APTase activities in its gill and kidney.

YIN Fei, SUN Peng, PENG Shi-ming, SHI Zhao-hong

Ministry of Agriculture Key and Open Laboratory of Marine and Estuarine Fisheries, East China Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, Shanghai 200090, China

摘要

通过逐级降低水体盐度的方法，将银鲳幼鱼分别在盐度25、20、15和10的条件下饲养120 h，检测不同盐度下、不同时间点银鲳幼鱼肝脏中抗氧化酶、鳃和肾脏ATP酶的活力.结果表明： 随着盐度的降低和处理时间的延长，肝脏中超氧化物歧化酶（SOD）和谷胱甘肽-S-转移酶（GST）活力总体表现出先升后降的趋势（$P<0.05$）；而过氧化氢酶（CAT）的活力除在盐度20的24 h和盐度15的48 h略有上升外，其他各时间点的酶活力均低于对照组（$P<0.05$）；谷胱甘肽过氧化物酶（GPX）活力表现出逐步升高的趋势（$P<0.05$）；谷胱甘肽还原酶（GR）活力在盐度15的24 h时出现上升，随后下降到较低水平（$P<0.05$）.鳃和肾脏中Na^+/K^+-ATP酶和Ga^{2+}/Mg^{2+}-ATP酶活力总体均表现为先升后降的趋势（$P<0.05$），只是在两种器官中ATP酶上升的起始盐度和时间有所不同.适当降低水体盐度可以激活和增强银鲳幼鱼肝脏中的抗氧化酶、鳃和肾脏ATP酶活力，消除机体中过多的活性氧自由基和稳定细胞内外渗透压平衡.但不同酶被激活具有一定的组织器官特异性和时序性，而且当达到机体的耐受极限后，酶活力反被抑制.

关键词: 银鲳 幼鱼 盐度 肝脏 鳃 肾脏 抗氧化酶 ATP酶

Abstract:

By decreasing water salinity gradually, the *Pampus argenteus* juveniles were cultured at water salinity 25, 20, 15 and 10 , for 24 h, 48 h, 96 h and 120 h, respectively, with the activities of superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPX), glutathione-S-transferase (GST), and glutathione reductase (GR) in liver and the activities of Na^+/K^+- and Ga^{2+}/Mg^{2+}-ATPase in gill and kidney determined. With the lowering of water salinity and the elongation of treated time, the liver SOD and GST activities had a trend of decreasing after an initial increase ($P<0.05$), while the CAT activity was lower than the control except that it had a slight increase at salinity 20 cultured for 24 h and at salinity 15 cultured for 48 h ($P<0.05$). The liver GPX activity had an increasing trend ($P<0.05$), while the GR activity at salinity 15 cultured for 24 h increased first and then fell down to a relatively low level ($P<0.05$). The Na^+/K^+- and Ga^{2+}/Mg^{2+}-ATPase activities in the gill and kidney also decreased after an initial increase ($P<0.05$), only the increase of ATPase activity at the thresholds of water salinity and treated time differed between the two organs. The results indicated that the decrease of water salinity could effectively stimulate and enhance the antioxidant enzyme activities in juvenile *P. argenteus* liver and the ATPase activities in its gill and kidney, and thereby, could effectively eliminate the excessive reactive oxygen species (ROS), sustain the intracellular homeostasis, and minimize the body damage. However, characterized by certain specificity and time sequentiality, the activation of test enzymes could also be inhibited when the salinity varied beyond the tolerance range of the body.

Key words: *Pampus argenteus* juvenile fish salinity liver gill kidney antioxidant enzyme ATPase

引用本文:

. 低盐度胁迫对银鲳幼鱼肝脏抗氧化酶、鳃和肾脏ATP酶活力的影响[J]. 应用生态学报, 2011, 22(04): 1059-1066.

. Effects of low salinity stress on the antioxidant enzyme activities in juvenile *Pampus argenteus* liver and the APTase activities in its gill and kidney.[J]. Chinese Journal of Applied Ecology, 2011, 22(04): 1059-1066.

链接本文:

http://www.cjae.net/CN/ 或 http://www.cjae.net/CN/Y2011/V22/I04/1059

没有本文参考文献

[1] 何闪英,高永杰,申屠佳丽,陈昆柏. **铜和模拟酸雨复合胁迫对酸模铜富集、生长及抗氧化酶系统的影响**[J]. 应用生态学报, 2011, 22(02): 481-487.