

2018年11月21日 星期三 首页 期刊介绍 编委会 ★作者指南 过刊浏览 期刊订阅 联系我们 通知公告 English

引用本文:

【打印本页】 【HTML】 【下载PDF全文】 【查看/发表评论】 【EndNote】 【RefMan】 【BibTex】

← 前一篇 | 后一篇 →

过刊浏览

高级检索

本文已被: 浏览 1025次 下载 912次

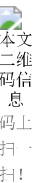
字体: 加大+ | 默认 | 缩小-

分享到: 微信 更多

## 饵料中添加海洋红酵母(*Rhodotorula* sp.) C11对幼参消化酶及免疫反应的影响

杨志平, 徐 哲, 周 倩, 张粹粹, 孙建明

大连汇新钛设备开发有限公司 大连 116039



摘要:

将海洋红酵母(*Rhodotorula* sp.) C11以104、105和106 CFU/g饵料添加到基础饵料中,每一剂量组设3个平行,每一平行50头幼参,用100 L塑料桶进行30 d静水充气养殖试验。试验期间每日投饵1次,投喂量为幼参体重的5%。投喂试验结束后,评估其对幼参消化酶及免疫反应的影响。结果显示,与对照组比较,投喂海洋红酵母C11 104、105 CFU/g,显著提高了幼参肠道胰蛋白酶活力( $P<0.05$ );投喂海洋红酵母C11 104 CFU/g,显著增加淀粉酶活力( $P<0.05$ )。投喂海洋红酵母C11 105 CFU/g,幼参体腔细胞的吞噬活力显著高于对照组( $P<0.05$ )。与投喂基础饵料的幼参比较,投喂海洋红酵母C11 105、106 CFU/g,幼参具有较高的体腔液溶菌酶(LSZ)活力( $P<0.05$ )。投喂海洋红酵母C11 104 CFU/g,幼参具有较高的体腔细胞裂解液(CLS)LSZ活力( $P<0.05$ )。投喂海洋红酵母C11 104 CFU/g,幼参体腔液总一氧化氮合酶(T-NOS)活力显著增加( $P<0.05$ ),投喂海洋红酵母C11 104、105、106 CFU/g,幼参CLS的T-NOS活力显著提高( $P<0.05$ )。本研究表明,饵料补充海洋红酵母C11可促进幼参的消化酶活力和免疫反应。

关键词: [幼参](#) [海洋红酵母C11](#) [消化酶活力](#) [免疫反应](#)

DOI: 10.11758/yykxjz.20150616

分类号:

基金项目:海洋公益性行业科研专项(201305001)资助

## Effects of Dietary Supplementation of Marine Yeast *Rhodotorula* sp. C11 on Digestive Enzyme Activity and Immune Response in Juvenile Sea Cucumber *Apostichopus japonicus*

YANG Zhiping, XU Zhe, ZHOU Qian, ZHANG Cuicui, SUN Jianming

Dalian Huixin Titanium Equipment Dev. Co., Ltd., Dalian 116039

Abstract:

Here we conducted a feeding experiment to investigate the effects of *Rhodotorula* sp. C11 on the digestive enzyme activity and the immune response of juvenile *Apostichopus japonicus*, and to explore its potential use as probiotics in the aquaculture of sea cucumbers. *Rhodotorula* sp. C11 was added to the diets at the concentrations of 0 (control), 104, 105 and 106 CFU/g feed. The juvenile sea cucumbers were randomly allocated in 12 plastic tanks (100 L) with 50 individuals per tank. During the 30 day trial, all experimental sea cucumbers were fed one dose of diet per that weighed 5% of their body mass. At the end of the trial we measured the activities of the intestinal digestive enzyme and immunological parameters of the sea cucumbers. Data were analyzed with one-way analysis of variance (ANOVA) and Duncan's multiple comparison of the means with SPSS 19.0 software. A statistical difference was considered significant when  $P<0.05$ . It was shown that comparing to the control *Rhodotorula* sp. C11 at the concentration of 104 and 105 CFU/g feed significantly enhanced the activity of the intestinal trypsin, and at 104 CFU/g feed, *Rhodotorula* sp. C11 boosted the activity of amylase ( $P<0.05$ ). *Rhodotorula* sp. C11 at the concentration of 105 CFU/g feed also increased the phagocytic activity in coelomocytes of sea cucumbers ( $P<0.05$ ). Moreover, dietary *Rhodotorula* sp. C11 at the concentrations of 105 and 106 CFU/g feed significantly elevated the activities of lysozyme (LSZ) in the coelomic fluid, while that at 104 CFU/g feed increased LSZ activities in the coelomocyte lysate supernatant (CLS) respectively ( $P<0.05$ ). Comparing to the control, the activity of total nitric oxide synthase (T-NOS) in the coelomic fluid was enhanced by *Rhodotorula* sp. C11 at 104 CFU/g feed, and the activity of this enzyme in CLS was elevated at 104, 105 and 106 CFU/g feed ( $P<0.05$ ). Our results indicated that live yeast *Rhodotorula* sp. C11 could improve the activity of the intestinal digestive enzyme and activate the innate immune response of *A. japonicus*, therefore, it could potentially be used as an effective probiotic in sea cucumber farming.

Key words: [Apostichopus japonicus](#) [Rhodotorula sp. C11](#) [Digestive enzyme activity](#) [Immune response](#)

版权所有 《渔业科学进展》编辑部 鲁ICP备05024434号-5

主管单位: 中华人民共和国农业农村部

主办单位: 中国水产科学研究院黄海水产研究所 中国水产学会

地址: 青岛市南京路106号, 黄海水产研究所《渔业科学进展》编辑部 邮编: 266071



