

论文

温度和蛋白质水平对德国镜鲤消化酶活性的影响

王洋^{1,2}, 徐奇友¹ 许红¹, 王常安¹, 尹家胜¹

1 中国水产科学研究院黑龙江水产研究所, 哈尔滨150070|2 上海海洋大学水产与生命学院, 上海201306

摘要:

以鱼粉、玉米蛋白粉和豆粕为蛋白源, 饲喂体质量为(165.24±8.07) g的德国镜鲤 (*Cyprinus carpio* L. *minor*) 60 d, 研究不同温度(18, 22, 26 °C) 下不同蛋白质水平(29%、31%、34%、38%、40%) 对德国镜鲤肠道和肝胰脏消化酶活力的影响。结果表明: 温度和蛋白水平对淀粉酶活性无显著影响, 主要影响蛋白酶以及肝胰脏和中肠脂肪酶的活性。脂肪酶的最适温度因不同部位而有所不同, 随着温度的升高肝胰脏脂肪酶活性在高蛋白质水平时活性比较高。18 °C时, 29%和31%蛋白质组的肝胰脏脂肪酶、34%蛋白质组中肠脂肪酶、40%蛋白质组前肠蛋白酶、29%和31%蛋白质组中肠蛋白酶、38%蛋白质组后肠蛋白酶活性最大; 22 °C时, 34%蛋白质组的肝胰脏脂肪酶、40%蛋白质组中肠脂肪酶、38%蛋白质组肝胰脏蛋白酶、34%蛋白质组的前肠蛋白酶活性最大; 26 °C时, 38%蛋白质组肝胰脏脂肪酶、34%蛋白质组肝胰脏蛋白酶、38%蛋白质组前肠蛋白酶、31%蛋白质组后肠蛋白酶活性最大。各个部位的蛋白酶活力均随着温度的升高而增大, 消化道各部位蛋白酶活力为: 中肠>前肠>肝胰脏; 肝胰脏淀粉酶活力最高, 但肝胰脏的脂肪酶活力低于肠道脂肪酶活性。随着温度的升高, 低蛋白质组的蛋白酶活性比高蛋白质组的活性高。

关键词: 鲤鱼 温度 蛋白质水平 消化酶

Effects of Different Temperature and Protein Levels on Digestive Enzyme Activities of *Cyprinus carpio* L. *minor*

WANG Yang^{1,2}|XU Qi-you¹|XU Hong¹|WANG Chang-an¹|YIN Jia-sheng¹

1.Laboratory for Animal Nutrition, Heilongjiang River Fishery Research Institute, Haerbin 150070, China|2.College of Fisheries and Life Science, Shanghai Ocean University, Shanghai 201306, China

Abstract:

Sixty day feeding experiment was conducted on (165.24±8.07)g *Cyprinus carpio* L. *minor*. With fishmeal as animal protein sources, corn gluten and soybean meal as plant protein sources, the effects of feed with different protein levels (29,31,34,38 and 40%) under different water temperature (18,22 and 26 °C) on digestive enzyme activities of intestine and hepatopancreas were studied. The results showed, in general, different protein levels under each temperature had significant effect on activity of protease and lipase in hepatopancreas and midgut, but not on amylase activity. The activity of lipase in different parts of intestine and hepatopancreas had different optimal temperature, and was raised somewhat with the increase of temperature and dietary protein level. Under 18 °C water temperature, the activities of lipase in hepatopancreas at 29% and 31% protein levels and midgut at 34% protein level were the highest ($P < 0.05$); the activities of protease in foregut at 40% protein level, midgut at 29% and 31% protein level and hindgut at 38% protein level were the highest. Under 22 °C water temperature, the activities of lipase in hepatopancreas at 34% protein level and midgut at 40% protein level were the highest; the activities of protease in hepatopancreas at 38% protein level and hindgut at 34% protein level were the highest ($P < 0.05$). Under 26 °C water temperature, the activities of lipase in hepatopancreas at 38% protein level were the highest; the activities of protease in hepatopancreas at 34% protein level and midgut at 31% protein level were the highest. The activity of protease in hepatopancreas and different parts of the intestinal was enhancing with environmental temperature increasing, and the order of protease activity was midgut and hindgut>foregut> hepatopancreas. In hepatopancreas the activity of amylase was the highest but the activity of lipase was comparatively lower than that of intestine. The specific activity of the protease of intestine and hepatopancreas was raised somewhat with the increase of temperature and the decrease of dietary protein level.

Keywords: *Cyprinus carpio* temperature protein level digestive enzyme activity

收稿日期 2010-05-13 修回日期 网络版发布日期

DOI: CNKI:22-1100/S.201103

基金项目:

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(538KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 鲤鱼
- ▶ 温度
- ▶ 蛋白质水平
- ▶ 消化酶

本文作者相关文章

PubMed

通讯作者:

作者简介: 王洋,女,硕士,研究方向:水生动物营养学。

作者Email:

参考文献:

本刊中的类似文章

1. 崔俊涛, 蔡秋波. 环境因子对新立城水库铜绿微囊藻生长的影响[J]. 吉林农业大学学报, 2010,32(1): 72-74
2. 关伟, 李喜武, 孙宏宇, 张洪江, 杨连玉, 刘庆福. 牛舍饲养环境温度控制系统的研制及应用[J]. 吉林农业大学学报, 2011,33(5): 587-590

文章评论

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text"/> 8640