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不同脂肪源对异育银鲫体脂沉积、内源酶活性和脂肪酸组成的影响

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Eff[illegible]ources on Body Lipid Deposition, Endogenous Enzyme Activities and Fat[illegible]osition of Carassius auratus gibelio

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摘要
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摘要 本试验旨在探讨饲料中不同脂肪源对异育银鲫体脂沉积、脂类代谢酶活性、消化酶活性和鱼体组织中脂肪酸组成的影响。选择尾均重(6.04±0.05) g的健康异育银鲫鱼种525尾，驯养1周后，随机分为5组，每组3个重复，每个重复35尾鱼。在基础饲料中分别添加4%的鱼油、豆油、猪油、花生油和混合油(鱼油∶豆油∶猪油=3∶4∶3)，制成5种等氮等能试验饲料。试验期为60 d。结果表明，鱼油组肝胰脏中粗脂肪含量显著低于其他各组(P<0.05)，各组间腹脂率以及肌肉中脂肪含量没有显著差异(P>0.05)。鱼油组肝胰脏脂蛋白酯酶和肝酯酶活性显著高于猪油组和花生油组(P<0.05)，鱼油组和豆油组肠道和肝胰脏中蛋白酶活性显著高于猪油组(P<0.05)，但与花生油组和混合油组无显著差异(P>0.05)。豆油组和混合油组肝胰脏脂肪酶活性显著高于猪油组(P<0.05)，且混合油组肠道脂肪酶活性显著高于猪油组(P<0.05)，其他各组之间没有显著差异(P>0.05)。各组间肝胰脏和肠道中淀粉酶活性没有显著差异(P>0.05)，但肠道淀粉酶活性普遍高于肝胰脏淀粉酶活性。鱼油组肌肉和肝胰脏中饱和脂肪酸(SFA)、二十碳五烯酸(EPA)和二十二碳六烯酸(DHA)含量显著高于其他组(P<0.05)。异育银鲫肌肉和肝胰脏中亚油酸(C18∶2n-6)含量均以豆油组最高，鱼油组最低，且上述2组间差异显著(P<0.05)。结果显示，鱼油能提高肝胰脏中脂蛋白酯酶和肝酯酶的活性，从而降低鱼体脂肪沉积，而猪油的作用相反；饲料中脂肪酸组成影响异育银鲫鱼体组织中脂肪酸的组成。

关键词： **异育银鲫;脂肪源;体脂沉积;脂类代谢酶活性;消化酶活性;脂肪酸组成**

Abstract： This study was conducted to evaluate the effects of different dietary lipid sources on body lipid deposition, fatty acid composition, and activities of lipid metabolism enzymes and digestive enzymes of Carassius auratus gibelio. Five hundred and twenty-five healthy Carassius auratus gibelio with an average initial weight of （6.04±0.05) g were randomly divided into 5 groups with 3 replicates per group and 35 fish per replicate. Five experimental diets were formulated to contain 4% lipid originated from fish oil, soybean oil, lard, peanut oil and mixed oil (fish oil∶soybean oil∶lard=3∶4∶3), respectively. The feeding trial lasted for 60 days. The results showed as follows: lipid content in hepatopancreas of fish oil group was significantly lower than that of the other groups (P<0.05); whereas, no significant difference was observed in abdominal lipid rate and muscle lipid content among all groups (P>0.05). The activities of lipoprotein lipase and hepatic lipase in hepatopancreas of fish oil group were significantly higher than those of lard and peanut oil groups (P<0.05). Protease activity in intestine and hepatopancreas of fish oil and soybean oil groups was significantly higher than that of lard group (P<0.05), but not significantly different from that of the rest groups (P>0.05). Hepatopancreas lipase activity of soybean oil and mixed oil groups was significantly higher than that of lard group (P<0.05), and the intestine lipid activity of mixed oil group was significantly higher than that of lard group (P<0.05), but no significant difference was observed among other groups (P>0.05). No significant difference was observed in intestine and hepatopancreas amylase activities among all the groups (P>0.05), but the amylase activity in intestine was generally higher than that in hepatopancreas.The centents of saturated fatty acid (SFA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in muscle and hepatopancreas of fish oil group were significantly higher than those of the other groups (P<0.05). In addition, the highest linoleic acid content in muscle and hepatopancreas was found in soybean oil group while the lowest in fish oil group, and significant difference was found between the above two groups (P<0.05). The results indicate that fish oil can enhance the activities of hepatopancreas lipoprotein lipase and hepatic lipase of Carassius auratus gibelio with relatively low body lipid deposition as a consequence, whereas the effects of the lard are on the opposite; and the fatty acid composition in tissues of Carassius auratus gibelio is influenced by dietary fatty acid composition. [Chinese Journal of Animal Nutrition，2011，23（4）：604 -614]

Keywords： **Carassius auratus gibelio; lipid sources; body lipid deposition; activities of lipid metabolism enzymes; activities of digestive enzymes; fatty acid composition**

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