

杨新鑫,王成辉,马玉清,项松平,王 剑.瓯江彩鲤酪氨酸酶基因的克隆与序列分析[J].上海海洋大学学报,2012,21(1):14-20

### 瓯江彩鲤酪氨酸酶基因的克隆与序列分析

#### Cloning and sequence analysis of tyrosinase gene in Oujiang color common carp

DOI:

中文关键词: [瓯江彩鲤](#) [体色](#) [酪氨酸酶基因](#)

英文关键词: [Cyprinus carpio var. color](#) [body color](#) [tyrosinase gene](#)

基金项目:国家公益性行业 [农业] 科研专项(200903045)

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中文摘要:

瓯江彩鲤 (*Cyprinus carpio* var. *color*) 是分布在我国瓯江流域的一种鲤科鱼类, 色彩艳丽, 体形优美, 深受人们喜爱。瓯江彩鲤有5种基本体色: “全红”、“大花”、“麻花”、“粉玉”和“粉花”, 是研究鱼类体色遗传的良好材料和理想模型。酪氨酸酶 (tyrosinase) 是影响黑色素合成的关键酶, 其转录的提前终止会导致黑色素无法合成。采用RACE技术从瓯江彩鲤皮肤转录本中克隆5种体色酪氨酸酶基因全序列, 并对序列进行分析。发现在瓯江彩鲤的5种体色中, 酪氨酸酶基因cDNA序列长度存在差异: “全红”为2 100 bp, “麻花”为 2 107 bp, “大花”为2 073 bp, “粉玉”为1 976 bp, “粉花”为2 111 bp; 且每种体色都存在两种类型酪氨酸酶基因 (TYR1, TYR2) 的转录。这两种酪氨酸酶基因mRNA所翻译成的氨基酸序列仅在一二级结构上有所差异, 而在结构域和三级结构上不存在差异。但酪氨酸酶基因的这些差异是否与瓯江彩鲤体色相关还有待后续的证明。

英文摘要:

Oujiang color common carp (*Cyprinus carpio* var. *color*) is a regional freshwater species distributed in the Oujiang River basin in China. Due to its rich color patterns and graceful body shape, Oujiang color common carp is a very popular fish to local inhabitants of the Oujiang River drainage. The fish has five kinds of body color patterns, namely “Whole red”, “Whole red with big black patch”, “Whole red with scattered black spots”, “Whole white” and “Whole white with big black patch”. This fish can be a very good model or material for studying body color inheritance in fish. Tyrosinase is a key enzyme involved in the formation of melanin compounds. The melanin can not be synthesized if premature transcription termination occurs in this gene. The cDNA sequences of tyrosinase gene were obtained from the skin tissue of five body color patterns of Oujiang color common carp using the technique of rapid amplification of cDNA ends (RACE). The results showed that the lengths of tyrosinase gene cDNA sequence are different in different color patterns of Oujiang color common carp. For instance, the length of “Whole red” is 2 100 bp, “Whole red with scattered spots” is 2 107 bp, “Whole red with big black patch” is 2 073 bp, “Whole white” is 1 976 bp and “Whole white with big black patch” is 2 111 bp. There are two types of mRNA transcripts in each kind of body color patterns. Analyzing the amino acid sequence from two types mRNA, the first and second structures of predicted protein are different, whereas the third structure and typical structural domain are same in tyrosinase gene. It would be left behind to further research whether the sequence difference of tyrosinase gene would be a direct factor or not in determining different color patterns of Oujiang color common carp.

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