

2018年11月19日 星期一 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 804次 下载 514次

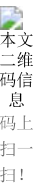
字体: 加大+ | 默认 | 缩小-

分享到: 微信 更多

滁州鲫(Carassius auratus)线粒体全基因组序列分析及系统进化

胡玉婷, 胡王, 江河, 凌俊, 段国庆, 潘庭双

安徽省农业科学院水产研究所 合肥 230031



摘要:

为探讨天然三倍体滁州鲫的系统进化地位,采用直接测序法获得滁州鲫线粒体基因组。其序列全长为16581 bp,碱基组成为31.6% A、26.2% T、16.1% G和26.1% C,包括13个蛋白质基因、22个tRNA基因、2个rRNA基因和1个非编码区,各基因的位置及组成与已公布的鲤科鱼类一致。除tRNA-Ser (AGY)外,其他21个tRNA的二级结构均具有典型的三叶草结构;13个蛋白编码基因中,除CO I 起始密码子为GTG外,其余均以ATG为起始密码子;CO II、ND3、ND4和Cytb基因的终止密码子为不完整的T,其他9个基因均具有完整的终止密码子TAA或TAG。序列分析表明,滁州鲫与其他鲫属鱼类(方正银鲫A系和D系、鲫、淇河鲫、萍乡肉红鲫、黑鲫、日本白鲫和日本银鲫)在线粒体基因组上均具有较高的序列同源性(>94%)。以鲤(Cyprinus carpio haematopterus)为外类群,基于线粒体13个蛋白质基因的核苷酸与氨基酸序列构建上述鲫属鱼类的系统进化树,结果显示,滁州鲫与方正银鲫亲缘关系最近,与黑鲫最远。综合以上研究结果,认为滁州鲫应为银鲫亚种的一个地方种群。

关键词: 滁州鲫 线粒体基因组 系统进化分析

DOI: 10.11758/yykxjz.20150509

分类号:

基金项目:安徽省财政专项资金项目(14D0508)、安徽省农业科学院成果推广项目(13E0504)和安徽省“115”产业创新团队(皖人才办[2009]2号)共同资助

Sequence and phylogenetic analysis of the complete mitochondrial genome of Chuzhou Crucian Carp (Carassius auratus)

HU Yuting, HU Wang, JIANG He, LING Jun, DUAN Guoqing, PAN Tingshuang

Abstract:

Chuzhou Crucian Carp (*Carassius auratus* in Chuzhou) is one of the natural gynogenetic crucian carp originated from Anhui Province in China. It belongs to the genus of *Carassius* within the family of Cyprinidae. To investigate the species status of this fish, we performed the direct DNA sequencing on the PCR products of the complete mitochondrial DNA (mtDNA). The total length of the mtDNA was 16581 bp, including 13 protein-coding genes, 22 transfer RNA genes, 2 ribosomal RNA genes and a non-coding control region. The composition and location of genes in the mitochondrial genome of Chuzhou Crucian Carp were consistent with those of Cyprinidae fishes published in GenBank. The tRNA genes formed typical secondary structures except for tRNA-Ser (AGY). The CO I gene had GTG as its initiation codon, and the other 12 protein-coding genes had ATG as the initiation codon. Among the 13 protein-coding genes, 9 had complete stop codons but CO II, ND3, ND4 and Cyt b had an incomplete T as the stop codon. Sequence analysis showed that there was high similarity between the mtDNA sequences of Chuzhou Crucian Carp and other species in genus *Carassius* recorded in GenBank (>94%). The nucleotide composition of Chuzhou Crucian Carp was 31.6% (A), 26.2% (T), 16.1% (G) and 26.2% (C). We conducted the phylogenetic analysis of the mitochondrial genomes of 9 *Carassius* fishes and 1 *Cyprinus carpio*, based on their nucleotide and amino acid sequences of all protein-coding genes. The results indicated that the phylogenetic relationship between *C. auratus* gibelio in Chuzhou and in Fangzheng was the closest while *C. auratus* gibelio in Chuzhou and *Carassius carassius* was the farthest. Our study may provide basic data and contribute to the classification of *Carassius* and Cyprinidae fishes.

Key words: Chuzhou Crucian Carp (*Carassius auratus*) Mitochondrial genome

相似文献(共20条):

- [1] 杨洪波,王荻,卢彤岩. 甲矾霉素在鲤体内的药物代谢动力学研究[J]. 淡水渔业, 2013, 43(3): 72-76.
- [2] 彭章晓,江敏,吴昊,何琳,杨李. 伊维菌素在鲤体内的药代动力学[J]. 水产学报, 2012, 36(3): 422-428.
- [3] 张四明 龙华. 方正银鲫、白鲫与鲫线粒体DNA限制性内切酶酶切比较[J]. 水产学报, 1992, 16(2): 120-129.
- [4] 陈剑兴,丁磊,吴康,姚建敏. 辐对鲫特异性免疫力的影响[J]. 水利渔业, 2004, 24(5): 19-20.
- [5] 付连君. 红白长尾鲫池塘养殖技术[J]. 河北渔业, 2011(6): 35-36.
- [6] R H Douglas, J Eva, N Guttridge. Size constancy in goldfish (*Carassius auratus*) [J]. Behavioural Brain Research, 1988, 30(1): 37-42.
- [7] K R John, M Segall, L Zawatzky. Retinomotor rhythms in the goldfish, *Carassius auratus* [J]. The Biological bulletin, 1967, 132(2): 200-210.
- [8] L. E. Mawdesley-Thomas, Furunculosis in the Goldfish *Carassius auratus* (L.) [J]. Journal of Fish Biology, 1969, 1(1): 19-23.

- [9] M J Connock. Intestinal peroxisomes in the goldfish (Carassius auratus) [J]. Comparative biochemistry and physiology. A, Comparative physiology, 1973, 45(4):945-951.
- [10] RM Walker, PH Johansen. Anaerobic metabolism in goldfish (Carassius auratus) [J]. Canadian Metallurgical Quarterly, 1977, 55(8):1304-1311.
- [11] Zych, Kenneth A.; Wolach, Allen H.. Resistance to extinction in the goldfish (Carassius auratus) [J]. Canadian Metallurgical Quarterly, 1973, 82(1):115.
- [12] 赵振山 高贵琴. 彭泽鲫的受精细胞学 [J]. 上海海洋大学学报, 1999(1):25-30.
- [13] 赵振山 高贵琴. 彭泽鲫的受精细胞学 [J]. 上海水产大学学报, 1999, 8(1):25-30.
- [14] 章超桦, 平野敏, 铃木健, 白井隆. 鲫的挥发性成分 [J]. 水产学报, 2000, 24(4):354-358.
- [15] R P Hedrick, J M Groff, T S McDowell. Gill sphaerosporosis in goldfish (Carassius auratus) [J]. Journal of wildlife diseases, 1990, 26(4):558-560.
- [16] H N Schnitzlein, H K Brown. Spinal motoneurons of the goldfish, carassius auratus [J]. Brain, behavior and evolution, 1975, 12(4-6):207-228.
- [17] W Chavin, J A Singley. Adrenocorticoids of the goldfish, Carassius auratus [J]. Comparative biochemistry and physiology. B, Comparative biochemistry, 1972, 42(4):547-562.
- [18] 王习达, 刘训猛, 方革, 陈静, 郭立新, 袁锐, 陈辉. 恩诺沙星在异育银鲫体内药代动力学研究 [J]. 金陵科技学院学报, 2013, 29(1):78-81.
- [19] 程玮玮. 安庆地区野生鲫鱼的个体生殖力研究 [J]. 安徽农业科学, 2010, 38(13):6727-6728, 6734.
- [20] 陈德芳, 汪开毓, 肖丹, 王均, 阳涛, 谢述琼, 华天. 丁香酚对鲫鱼麻醉效果的研究 [J]. 水产科技情报, 2010, 37(6).

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

电话: 0532-85833580 E-mail: yykxjz@ysfri.ac.cn

技术支持北京勤云科技发展有限公司

