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二倍体鲫鱼F2产生不同倍性卵子的证据

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摘要 在检测到鲫鱼F2产生三种不同大小(直径分别为0.13 cm, 0.17cm和0.2 cm)类型的卵子基础上,我们进行了F2(♀)×红鲫(♂)及F2(♀)×四倍体鲫鱼(♂)的交配实验,通过染色体计数和流式细胞仪分析,在F2(♀)×红鲫(♂)后代中获得了四倍体、三倍体、二倍体鱼;在F2(♀)×四倍体鲫鱼(♂)后代中获得了四倍体和三倍体鱼。这两个交配组合后代中出现的不同倍性的鱼类为证明鲫鱼F2能产生三倍体、二倍体和单倍体卵子提供了进一步证据。F2(♀)×红鲫(♂)中雄性四倍体鱼的存在说明在四倍体后代中存在基因型为XXXY的个体。对上述两个交配组合后代的四倍体鱼和三倍体鱼的性腺结构观察表明四倍体鱼是可育的,而三倍体鱼是不育的。我们认为鲫鱼F2能够产生二倍体和三倍体卵子与核内复制机制和生殖细胞的融合有关。

关键词

分类号

Evidence of Different ploidy Eggs Produced by Diploid F2 Hybrids of *Carassius auratus* (♀)×*Cyprinus carpio* (♂)

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Abstract

Base on the presence of three types of eggs with different diameters: 0.13 cm, 0.17 cm and 0.2 cm, we made two crosses: F2 (♀) × diploid red crucian carp (♂), and F2 (♀) × F10 tetraploid (♂). The ploidy levels of the progeny in these two crosses were examined by means of chromosome counting and DNA content measurement using flow cytometer. In the offspring of the former cross, the tetraploids, triploids and diploid were obtained. In the progeny of the latter cross, the tetraploids and triploids were observed. The production of the different ploidy level fish in the progeny of the two crosses provided further evidence that F2 generated triploid, diploid and haploid eggs. The presence of the male tetraploid found in F2 (♀) × diploid red crucian carp (♂) suggested that the genotype of XXXY probably existed in the tetraploid progeny. The gonadal structures of the tetraploids and triploids indicated that both the female and male tetraploids were fertile and the triploids were sterile. We concluded that the formation of the different ploidy level eggs from F2 contributed to the endoreduplication and the fusion of germ cells.

Key words

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