Comparison of genetic structure of *Litopenaeus vannamei* (Boone, 1931) broodstocks imported and farmed by microsatellite method

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Abstract

This study aimed to compare the genetic characteristics of different stocks of *Litopenaeus vannamei* imported broodstocks two stocks (F0: 1 and 2) with reared one stock (F1) in Iranian climate in during 2021. After extracting DNA from the muscle tissue of different stocks, their genetic index has been examined using ten pairs of specific polymorphic microsatellite markers. Results showed that the mean of alleles in F1 broodstock with a rate of 4.000 ±0.298 was higher than the values of F0: 1 and 2 broodstock (3.500±0.269 and 3.900±0.233, respectively). The average heterozygosity observed in F1 with a rate of 0.259±0.081 was more than imported zero broodstock (F0: 1 and 2) with a rate of 0.240±0.075 and 0.161±0.040, respectively, increasing in expected heterozygosity had reduced genetic diversity in all three stocks. The inbreeding coefficient in the imported broodstocks of the second year of the zero generation (0.480±0.276) was higher than the values obtained in the cultured (0.303±0.456) and imported broodstocks of the first year of the zero generation (0.300±0.286). There was the greatest genetic distance (0.380) and genetic differentiation (0.100) between the imported broodstocks of the first year of the zero generation and the broodstocks of the second year of the imported zero generation. According to the results, one of the reasons for the decrease in genetic indicators in imported broodstocks compared to reared broodstocks can be due to the low number of imported broodstocks participating in mating (fundamental population) and genetic improvement of cultured broodstocks.

Keywords: *Litopenaeus vannamei*, imported broodstock, reared broodstock, Genetic index.