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Divergent selection of mice for high and low swim stress-induced analgesia alters polymorphism at microsatellite loci

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Abstarc :

The objective of this study was to determine microsatellite polymorphism in mice lines, divergently selected over 60 generations for high (HA) or low (LA) swim stress-induced analgesia. The polymorphism analysis covered 40 microsatellite markers within two lines (20 and 19 individuals for HA and LA line, respectively. The selection breeding strategy was based on a heterogeneous, outbred population of Swiss-Webster mice. The lines were earlier found to differ in brain opioid receptor density and in the expression of opioid-mediated phenomena, such as analgesic sensitivity to opiates and reversibility of swim stress-induced analgesia (SSIA) by naloxone. Apart from nociception-related traits, the HA mice displayed, as compared to the LA animals, higher emotionality in various behavioural tests, and higher degree of hypothermia when subjected to a hypothermic challenge. The present study showed that selection for HA and LA phenotypes affects the frequency of microsatellite alleles. The number of alleles per locus varied from 1 to 6 with a mean value of 2.9 for HA and 2.7 for LA line. Thirty-seven alleles were identified as specific to HA and 30 as specific to LA line. The expected heterozygosity ranged from 0.324 to 0.797 (mean 0.618). Of the 40 examined markers loci five had relatively high PIC value (> 0.7). It is concluded that HAand LA mice constitute a valuable source for identification of genes determining the magnitude of pain sensitivity.

Key Word :
DNA fingerprinting / mice / microsatellites / polymorphism/ stress-induced analgesia, selection

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