

Russian Journal of Genetics 1996 vol.32 N10, pages 1156-1162

Specificity and Time of the Appearance of His⁺ Reversions Induced by Histidine Starvation in *Salmonella typhimurium*

Gizatullin F., Babynin E.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

It was previously established that reversion of the hisG46 allele of *Salmonella typhimurium* to prototrophy occurred upon histidine starvation. In this paper, it was shown that histidine starvation does not affect the appearance of mutants resistant to L-arabinose and rifampicin. Threonine starvation did not change the frequency of His⁺ revertants. Analysis of His⁺ revertant clones did not reveal additional L-arabinose resistance mutations. Thus, these experiments allowed the conclusion that amino acid starvation does not lead to a non-specific increase in the mutation rate. In addition, it was shown that spontaneous His⁺ revertants start to arise after two to three hours of histidine starvation, and this process lasts for four days. Nevertheless, original His⁻ cells did not grow in a culture generating His⁺ revertants. Traces of histidine and novobiocin added to a minimal medium retarded reversion realization. However, the occurrence of revertants was not markedly inhibited by chloramphenicol. Based on the results, it is assumed that adaptive His⁺ reversions occurred due to a special mode of replication induced upon histidine starvation and requiring no de novo protein synthesis.
