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Triggering type of protective activity of antimutagens of dihydropyridine series

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Effective antimutagens (AM) inhibiting spontaneous and induced mutagenesis in germ and somatic cells of animals were revealed among 1,4-dihydropyridine derivatives. Effects of these compounds were detail studied in different test-systems that made it possible to establish peculiarities and some mechanisms of their action. It is typical that AMs display long lasting protective effects that were registered not only immediately after AM exposure but also after AM excretion from organism of experimental animals (*Drosophila*, laboratory mice, pond carp). Data obtained allow supposition that protective action of AMs in mouse somatic cells are likely to be due to activation of glutathion-S-transferase system. Experiments with *Drosophila* larvae and adults show that AMs do not interact with ethyl methanesulfonate (EMS) and most likely induce protective mechanisms counteracting mutation process at its different stages. Suppression of EMS-mutagenesis and clastogenesis proved to be owing to AM influence on DNA repair. In *Drosophila* females of different genotypes, AMs increased maternal repair efficiency of primary lesions induced by EMS in male spermatozoids. They were capable to modulate maternal repair systems for 5–14 days following treatment of females with AMs indicating long term and stable expression of appropriate genes. There are data confirming their capacity to induce heat shock gene expression. Thus, the protective action of these AMs and phenomenon of its long term manifestation are due to triggering the host defence mechanisms and prolonged expression of responsible genes. Here we hypothesize that AMs control gene expression at the transcription level.