

**Polimorphism of  $\beta$ -specific carboxylesterases in the populations of *Drosophila melanogaster* of Ukraine**A. Andrievskii<sup>a</sup>, D. Radionov<sup>a</sup>, G. Labunec<sup>a</sup> and I. Kozeretska<sup>b</sup><sup>a</sup>*Odessa National I. I. Mechnikov University, Dvoryanskaya str., 2, Odessa, 65026, Ukraine, 65026 Odessa, Ukraine;* <sup>b</sup>*National Taras Shevchenko University of Kyiv, Volodymyrska str., 64, 01033, Kyiv, Ukraine, 01033 Kyiv, Ukraine**kozeri@gmail.com*

As a result of radioactive contamination after Chernobyl disaster, there are a lot of animals that live in the condition of chronic radiation in the Ukraine. One of the most important consequences of the radioactive effect is a change in the frequency of different alleles and genotypes in populations. Therefore, we have investigated the frequency of different allotypes of  $\beta$ -specific carboxylesterases ( $\beta$ -Est) in different populations of *Drosophila melanogaster*. One of them has been chosen from natural populations in southern Ukraine (Odesskaya) and three others from radioactive contamination territories (1-3). Using the method of vertical-plate alkaline electrophoresis in polyacrylamid gel (7%) we separated ferment-containing buffer-triton tissue extracts of imago of *D. melanogaster* (15 flies per population). After the electrophoresis, the gel was exposed to the incubatory medium (pH 7,4), that contained  $\alpha$ - and  $\beta$ -naphthilacetates and prussian blue. The level of activity of some esterase was determined by controlling the intensity of coloring of the different fractions, which correspond to the ferment localization in gel, and which contain products of azocoupling of naphthols and diazonium. Using electrophoresis we have shown that there were two allelic forms of solubility  $\beta$ -specific carboxylesterases in the extracts we have obtained from fruit flies from different populations: fast form (F-type) and slow form (S-type) with Rf indexes 350 and 380 respectively. S-allozyme has not been detected in the population Odesskaya and 2 and thus the frequency of F-allozymes in this groups reaches 100%. In the population 1 the frequency of S-allele were 70,7% and in this respect the frequency of F-allele were equal to 29,3%. Whereas in the population 3, which was obtained from the most contaminated territory, the frequency of F-allele (73,0%) was significantly higher than the one of S-allele (25,8%). Interestingly, all F-alleles were in heterozygote condition in this group. Also, in all cases the activities of S-allozymes were higher than of F allozymes. For instance, in the population 1 the coverage activity of S-allozymes of B-specific carboxylesterases was  $1,025 \pm 0,096$  and for F-allozymes the respective index was  $0,710 \pm 0,088$  (enzymes activity show in relative units (indexes) of optical density, calculated by a special PC programme ANAIS). Equal indexes in the population 3 were  $1,187 \pm 0,124$  and  $0,858 \pm 0,072$  respectively. More importantly, the activities of S-allozymes in the population Odesskaya were in one and a half fold higher than in other populations and obviously this is a special peculiarity of this group of *D. melanogaster*.