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CYTOGENETIC EFFECTS UNDER THE EPIMUTAGEN (TRITON X-305) ACTION ON WINTER WHEAT

Changes in the structure and number of chromosomes can be caused by both external and internal factors. Chromosomal changes leading to mutations were first described in the genus Oenothera. Subsequent studies of some plant species showed that these changes are a complex set of translocations. But even earlier, studies of other objects have shown that other types of changes (in particular, paracentric inversions) are quite often more likely causes of hereditary changes than much rarer translocations, although this type of change is more promising for cultivated plants. Already at the early stages of research, it became clear that chromosomal aberrations play an essential role in the evolution of living organisms. The study of plant chromosomes in pachytene made it possible to establish that such types of rearrangements as deletions, duplications, inversions and translocations have a complex and complex char-acter.

The aim of the research was to establish the consequences for the action of an epigenetic substance at the plant cell level for comparison with conventional physical mutagens and chemical supermutagens, to establish the variability of individual parameters, the possibilities of modeling and predicting the process, and the suitability of classical methods in the study of epimutagens.

Seeds of common wheat of six varieties (1000 seeds in each treatment variant and in control) were soaked in an aqueous solution of epimu-tagen Triton-X-305 (hereinafter TX-305, Merck KGaA, Darmstadt, Germany) at concentrations of 0,01%, 0,05%, 0,1%, and 0,5%. The exposure of each of the options was 36 hours. Cytological studies were carried out on mitoses of the primary roots of wheat during the first hour of the passage of late metaphase and ear-ly anaphase for all types in laboratory brains. After treatment with mutagens, they were germinated in Petri dishes on a filter paper soaked with dis-tilled water in a thermostat at a temperature of +25°C. Then the central core with a depth of 0,8-1,0 cm was fixed at the Clark fixer, which consists of 3 parts of 96% alcohol and 1 part of ocular acid, with a stretch of 24 years. Fixation material was taken in 70% alcohol at a

temperature of +2 °C in the refrigerator. For the skin version, 25-30 roots were fixed. Cytological analyzes were performed on temporary pressure preparations prepared with acetocarmin. Like the roots, they choked badly; the tissues were macerated with 45% acetic acid. Preparations were prepared according to the standard method. Roots was taken in 70% alcohol in the refrigerator. For an additional method, it is possible to fix single pairs of fragments, dicentric chromosomes, micronuclei and mixed chromosomes.

The variability of the material in terms of the overall frequency of chromosome rearrangements showed that an increase in con-centrations generally leads to a significant increase in the frequency of chromosome aberrations, however, in relation to differences between varieties, the Tyuki test showed the unreliability of the result obtained and it cannot be said that, despite a slightly higher frequency for the second group of cultivars Courtot, Lyrik, and Flamenko, they somehow significantly differ from the cultivars of the first group, less susceptible to the action of this epimutagen, Spivanka, Altigo, and Podolyanka. Thus, for this indicator, we are forced to reject the hypothesis of significant differences in the effect on the chromosomal apparatus of the cell.

The ratio of fragments and bridges is usually in favor of fragments, that is, more than 1, which is generally normal for the action of a chemi-cal agent, except for the Lyrik variant, TX-305 0,5%, while in general this ratio first increases as the concentration increases, then begins a gradual decrease, that is, the same trend is observed as in earlier studies, when at high (at the level of semi-lethal) concentrations, the action of chemicals became less selective in terms of the frequencies of types of chromosomal rearrangements. In the constructed model, the varieties Flamenko and Podolyanka are most clearly distinguished (Figure 1, Table 6), the other varieties are partially mixed in the factor space and, thus, have a significantly lower resolution when studying this set of parameters. It should also be noted that for the first time indicators in the study of damaging effects at the cell level in our studies turned out to be less effective than indicators of growth and development at the previous stage of research. As a rule, the opposite is true - cytological studies are much more accurate for monitoring undesirable effects. At the same time, it is also obvious that in this case the focus of action is more shifted to changes that do not affect the DNA of the cell.

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