

Molecular-cytogenetic analysis of common wheat lines with *T. kiharae* genetic material

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T. kiharae (A^tA^tGGDD, 2n = 42) is of interest for the improvement of common wheat varieties as a source of high protein and gluten content and resistance to diseases. The aim of the study was to analyze the genomic structure and cytological stability of the common wheat lines containing genetic material of *T. kiharae*. To achieve this goal, the C-banding method and SSR- and SNP-analyses were used. Using the C-banding, the presence in karyotypes of hybrid lines whole chromosomes of *T. kiharae* (2A^t, 3A^t, 2G), replacing the homoeologous chromosomes of wheat A- and B-genomes, and chromosome arms (1A^tL, 2A^tS, 5A^tL, 6A^tL, 5GL, 6GL) among aberrant chromosomes composed by the *centricbreak-fusion* type. The change in the C-banding pattern observed in some chromosome regions may be a consequence of introgression of small fragments of *T. kiharae* chromatin. This was confirmed by the results of SSR-analysis showing the presence from 2 to 7 *T. kiharae* fragments in the chromosomes of all three wheat subgenomes. The highest frequency of introgressions is shown for chromosomes 1A, 1B, 2A, 2B, 5A and 5B, while in chromosomes 4A, 4B and 7B no alien chromatin was detected. The data obtained indicate that recombination events with the participation of *T. kiharae* chromosomes or their fragments occurred in all studied introgression lines. It was shown that introgression lines obtained on the base of the Saratovskaya 29 cultivar are characterized by a higher number of alien introgressions compared to cv. Festivalnaya and Rassvet. Analysis of microsporogenesis indicated a high level of bivalent chromosome pairing at the stage of metaphase I (95.87–99.76 %) in all introgression lines. Most lines are also characterized by a high percentage of normal tetrad (88.18–93.0 %). The meiotic stability of hybrid lines creates prerequisites for the preservation of alien introgressions in a number of subsequent generations, which makes it possible to use this material to expand the gene pool of wheat.

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