The production of new potential secondary salt tolerant Tritipyrum introgression genotypes (NPSSTTIGs) and characterization the substitution lines (5D/5E^b) in 6x wheat ×6x primary tritipyrum progenies (F_2, F_3) by cytology and molecular cytogenetic methods

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Abstract

Intergeneric hybridization is one way to transferring desirable gene/s into field crops. In order to improve primary *Tritipyrum* lines by D genome of bread wheat (Triticum aestivum, 2n=6x=42, AABBDD). The various 167 crosses between 6x bread wheat cultivars (AABBDD) and primary *Tritipyrum* lines (2n=6x=42, AABBE^{b}E^b) was carried out and 49 F_1 seeds was produced. The chromosomal counting in 291 mitotic cells of selfed progenies including, 44 F_2/F_3 plants and 19 F_2/F_3 plants (217 meiotic cells) of new potential secondary salt tolerant *Tritipyrum* introgression plants (NPSSTTIPs) by classical cytology indicated the aneuploidy reduction in comparison with aneuploidy amount F_1 progeny of 6x wheat and primary tritipyrum crosses. The presence of single chromosome/s in F_1 NPSSTTIPs plants showed no chromosomal homeology between D and E^b chromosomes. The assessment of E^b chromosomes in mitotic spreads of individual F_3 NPSSTTIPs plants derived from bread wheat (cv: omid) × primary *Tritipyrum* (line: St/b) and bread wheat (cv: navid) × primary *Tritipyrum* (line: (Ka/b)(Cr/b)), respectively, by in situ hybridization, using genomic DNA of *pseudoroegneria stipifolia* species (2n=2x=14, SS) as probe, labeled with Biotin-11-dUTP, indicated 1-6 single E^b chromosome in these two progenies. This probe was recognized as a powerful tool for selecting the chromosomal constitution of NPSSTTIP plants containing 14'A, 14'B, 12'D, 2'E^b chromosomes in F_3segregation generations from 6x primary *Tritipyrum* × bread wheat hybridization. If the 5E^b chromosome of primary Ttritipyrum substitutes with 5D chromomose of bread wheat, then the substitution (5D/5Eb) lines will be obtained.

Key words: primary *tritipyrum*, secondary *tritipyrum*, intergeneric hybridization, *Psedudoroegneria stipifolia* genomic probe, genomic in situ hybridization (GISH).