Cytological and Molecular studies in some interspecific hybrids resulted from crossing between tetraploid and hexaploid wheat

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Abstract

Relatives of wheat are rich repositories of beneficial genes that are capable of defying adverse situations. However, these species are not readily crossable with cultivated ones. The present study attempted to cross three tetraploid wheat strains as male parents with five cultivated hexaploid bread wheat varieties to understand the intricate behavior of hybrids in relation to cytology, Scanning Electron Microscopy for wheat grains and SDS-PAGE. Scanning electron microscopy of dry grains revealed morphological details of grain surface structure. The grains of line 20 cultivar showed narrower size than the grains of Sides 8 or 12 or 13 lines. The hairy end of the Sides 6 grains is broader than the hairy end of the Pc 62. The hairy end of is completely disappeared from grains. Six crosses were obtained. Various degrees of chromosome anomalies were seen with all the hybrids of *T. durum* and *T.aestivum*. D genome from *T. aestivum* could enhance more lagging chromosomes rather than genomes A and B of cultivated species. Precocity of certain chromosomes in laggard formation was evident, pointing towards evolutionary self balance of the genomes which prevented homeologous pairing. They are eliminated in hybrids. Fraibilin clearly corroborated with genetic proximity of the species, which distinguished themselves by maintaining the genome homeology.

Key words: wide hybridization, *Triticum*, SDS-PAGE, Fraibilin, Laggards, meiotic anomalies, tetraploid wheat, bread wheat.