Study on karyotype of selected tea clones (Camellia sinensis) in Iran

ABSTRACT

In order to study karyotype of selected tea clones (Camellia sinensis) in Iran, squash technique was used. Root samples were pretreated with alpha-bromonaphthalene and then were fixed in Farmer solution. It was hydrolyzed by 1 normal of chloridric acid and stained byaceto-iron-haematoxylin. Total chromosome length, long and short arm length, ratio of long to short arm, and centromere index were measured and also numbers of chromosomes were counted. In all genotypes numbers of chromosomes were 2n=30. In table of correlation coefficients, ahigh positive correlation was observed between total length ofchromosome with length of long arm (r=0.987++), total length ofchromosome with length of short arm (r=0.973++), and length of long arm with short arm (r=0.925++), while there was a high negative correlation between the ratio of long to short arm with centromere index (r=-0.990++). Based on the analysis of main components, total length (TL), long arm length (LA), and short arm length (SA) contributed in creation of the first component, and the most contribution is attributed to long arm of chromosome with coefficient of 0.984. Also, in order to create the second component, parameters such aslong arm to short arm ratio (AR) and centromere index (CI) were involved from which centromere indexwith coefficient of 0.837 played the greatest role. The results showed that in terms of %TF statistics G1 and G7 respectively had the most symmetric and asymmetric karyotypes, and in terms of TL,DRL, TL, and L/S statisticsG2 and G7respectively had the most symmetric and asymmetric karyotypes.

Keyword: Tea; Camellia sinensis; Chromosome; Karyotype; Squash technique