Determination of molecular markers associated with the agronomic Traits in watermelon (*Citrullus lanatus*)

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Yield, quality and other agronomic characteristics of horticultural crops are very important in terms of breeding selection criteria. By set a linkage between phenotype and genotype with the associating mapping technique, phenotype-related DNA markers can be detected. Association mapping involves searching for genotype-phenotype correlations in unrelated genotypes and often is more rapid and cost-effective than traditional linkage mapping. In this study, DNA markers related to some agronomic traits of watermelon populations were identified with the aid of association mapping technique. Inter-primer binding site (iPBS), inter simple sequence repeat (ISSR) and simple sequence repeat (SSR) markers were used to assess the genetic diversity of 96 watermelon genotypes. According to similarity coefficient, the lowest (0.29) and highest (0.99) similarities were detected between watermelon genotypes. The association maps revealed that general linear model (GLM) model yielded the best outcomes for 5 parameters and mixed linear model (MLM) models yielded the best outcomes for the other parameters. For all parameters, 8-69 related marker were identified, and regression models were able to explain related characters by between 11.3 - 84.7%. Two-marker model was able to explain yield values by 68.6%, three-marker model was able to explain glucose value by 62.8%. It was concluded that iPBS technique, which was used for the first time in watermelon, could reliably be used for association mapping. It was observed that watermelon genotypes exhibited a large diversity in morphological characteristics and a narrow diversity in genetic parameters. Present findings revealed that association mapping method for existing watermelon genotypes was an efficient method for identification of marker-trait relationships without generation a mapping population.

Biography

Omer Faruk COSKUN has completed his PhD from Erciyes University, Turkey.

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