



# Assessment of molecular diversity and tolerance of increased salinity levels in irrigation of barley seedlings

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## Abstract:

Abstract Salinity is one of the biggest challenges that limit the productivity of crops. Therefore, Screening for more tolerant varieties is a top priority of breeders. Landraces are great source for genetic variability that would be used for improvement of new varieties. Thus, in this study five barley landraces genotypes were collected from different locations in the New Valley governorate of Egypt and two check varieties, Giza 123 (salt tolerant) and Beecher (salt sensitive) as a control were evaluated for their potentiality to salt stress tolerance and genetic variability, via exposure of seedlings to series graded salt concentrations course and inter simple sequence repeat (ISSR) molecular marker analysis. Survived seedlings were counted under both non-stress and stress conditions. Highly significant differences were observed among genotypes under salt stress conditions, whereas all genotypes were affected by salinity stress. Seedlings mortality varied among genotypes, where salt sensitive check (Beecher) variety was highly affected. While, L2 had the lowest seedlings death rate and distinct over salt tolerant check variety (Giza 123). Furthermore, ISSR molecular marker techniques were used for study of genetic diversity and similarity relationships among the seven genotypes. The polymorphism was 86.89%. L1 and L5 were the highest similar (0.74) genotypes, but the lowest similarity (0.45) was noted between L4 and Giza 123 genotypes. Moreover, dendrogram analysis gathered the highest salt tolerant genotypes in one group. Superiority of L2 genotype in comparison with check salt tolerant variety suggests that landraces could be beneficial tool for genetic improvement of barley stress tolerant lines.

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