

## Abstract

*Citrullus colocynthis* (Cucurbitaceae family) is a herbaceous perennial which is widespread along various desert regions. It is one of the domestic plants of warm and arid regions in Asia and Africa that is transmitted in warm and arid regions of Sistan & Balochistan and has a precious value about industrial and medicinal use. Seed germination of this plant does not happen easily. This research treated in 3 ways, first different treatments seeking to break dormancy of *Citrullus colocynthis* seed evaluated and then the best treatment was chosen to produce plants and transition to pot conditions. The treatments included sulfuric acid 98% ( $H_2SO_4$ ) in 20 and 30 minutes time intervals, potassium nitrate ( $KNO_3$ ) 0.2%, hot water in 90 centigrade treatment of scratching by sand paper and for comparing these treatments, distilled water was used as control in the second step. Short plants produced from the best treatment of breaking dormancy were transplanted to 3 types of pots including 1-sand 2-sand and clay 3-sand, gravel and clay 4-sand and clay, in order to pitch under salinity and drought stress. Studying stresses include salinity factor in level 1 (0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1.2, 1.5 mol/lit NaCl) and drought factor in level 2 (0, 0.3, 0.6, 0.9, 1.2 Mpa) have been surveyed. The experiment was performed as a factorial in a completely randomized design with 3 repetitions during 30 days period. Results of variance analysis and mean comparison showed that there are significant differences in level 0.01 between treatments and different soil types. This research showed that the best treatment for breaking dormancy is scratching by sand paper and the best soil used is sandy soil and also the tolerance threshold of plants to drought is about 0.9 Mpa and salinity tolerance threshold is 1 mol/Lit. However, it should be noted that the polar effect of different soil types and stresses upon measured traits has a significant impact on 0.01 statistical level.

Key words: *Citrullus colocynthis*, breaking dormancy, salinity stress, drought stress



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# **In vitro investigation of germination and establishment of Bitter cucumber (*Citrullus colocynthis*) during salt and drought Stresses**

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