Abstract

In order to investigate the morphological and phytochemical diversity of different populations, the effect of chitosan and titanium nanoparticles was studied at the Agricultural Biotechnology Research Institute of Zabol University in 1395. This experiment was conducted in potted conditions factorially in the form of a randomized complete block with three replications. For doing this research, Trachyspermum seeds were collected from different places in Sistan, Iranshahr, Mashhad, Neyshabur, Sarbisheh, Birjand, Shiraz, Afghanistan and Pakistan and equall were planted in pots of almost light soil mixture of sived sand,clay, humos and animal manure. After plantation, the pots were transferred to the greenhouse and stored in the same conditions at daily 25-30 ° and nightly 18 to 20 ° C. The investigated factors were digits (10 digits) titanium nanoparticles (0, 30, 60 and 90 mg per litter) and chitosan (0, 100, 150 and 200 mg per litter). Chitosan and Titanium solution was sprayed of four-leaves stag . Then after using Chitosan ,Plant aerial parts were picked up at four-leaves stage for later studies, and Stem length traits either Number of leaves, leaf length, leaf width, fresh weight of aerial part, dry weight of aerial part, root number either, average Root length either, root fresh weight, root dry weight, carotenoid, phenol, guaiacol , sulfur oxide, anthocyanin, catalase, flavonoid were investigated and data were analyzed using SAS9.1 software. And comparisons of the averages were compared by using the Duncan multi-domain test at 5% level. The results showed that for all the studied traits, Pakistan population and the dose of 150 chitosans and the non-use of titanium (control) was the best case. The same study showed that chitosan increased the phenol composition in the plant. In the present study, the increase in the length of the stalk (height) was different in different titanium treatments and increased the height in the treatment of 60 mg per litter of titanium.

Keyword: Medicinal plants, Trachyspermum, Diversity examination, Genetic similarity.

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