

Effect of Different Seed Treatments and Media on Growth and Biomass of Indian Cheese Maker-*Withania coagulans* (Stocks) Dunal

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1. Introduction

India is rich in medicinal and aromatic plants covering an extensive area with different environmental conditions. *W. coagulans* is distributed in the East of the Mediterranean region extending to South Asia *i.e.*, Iran, Afghanistan, Pakistan (Sind and Baluchistan), Nepal and India, up to 1700 m. In India, it is found in (North-West India) Himachal Pradesh, Punjab, Uttarakhand and Rajasthan. In Rajasthan it is sporadically distributed in Barmer, Jaisalmer and Jodhpur districts of Western Rajasthan desert and it is not common, categorized as “vulnerable species” (Pandey et al 2012).

2. Material and methods

The experiment was conducted at the Model Nursery on Medicinal and Aromatic Plants, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari, Gujarat in 2019-20. The experiment was conducted in completely randomized design with factorial concept, including twenty treatment combinations comprising of four levels of seed treatments with GA3 (0, 50, 100, 150 ppm) and five levels of different growing media. Data were analysed as per standard statistical procedure using completely randomized design with factorial concept (FCRD).

3. Result and discussion

Among various concentrations of GA3 as pre-soaking treatment, 150 ppm GA3 (S) showed significantly better results for germination, growth, biomass and alkaloid content in *W. coagulans*. Similarly, among growing media, red soil (M1) recorded maximum germination percentage, collar diameter, number of branches per plant, number of leaves per plant, total leaf area, length of the main root, thickness of main root, root dry biomass, shoot dry biomass, fresh weight of plant, dry weight of plant, survival percentage of the plant and total alkaloid content of plant. Overall, the result indicated that pre-sowing seed treatment with GA3 -150 ppm for 24 hrs and subsequently sowing treated seeds in M1 media comprising of red soil (control) can enhance growth and alkaloid content. Interaction effect between pre -sowing seed treatments and different growing media was found non -significant in all case except number of branches at 30 DAS and total alkaloid content. In conclusion, germination and growth of Indian cheese maker – *W. coagulans* can be enhanced by sowing the seed pre-soaked in the 150 ppm GA3 for 24 hours and placing it in the red soil. Positive effect of pre-treatment on alkaloid content suggests the potential of enhancing productivity of *W. coagulans* in net house.

Reference

Pandey RP, Meena SL, Padhye PM and Singhadiya MK 2012. A review of depleting plant recourses, their present status and conservation in Rajasthan, India. *Biological Forum* 4(1): 213-230.