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EFFECTIVENESS OF VARIOUS TREATMENTS IN OVERCOMING SEED DORMANCY IN *Abrus precatorius* L.

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Abstract

The current study investigates the effectiveness of various methods to overcome the seed dormancy in Abrus precatorius (Red seed) and Abrus precatorius (White seed).Seeds were subjected to different treatments like soaking treatment, hot water treatment (100°C) and mechanical scarification. The results revealed the seeds treated with hot water treatment shows maximum germinability as compaired with hot water scarification treatment.

Key words: *Abrus precatorius, Germination, Dormancy.*

Introduction.

Abrus precatorius (L.) is commonly known as Gunja belonging to family fabaceae, abundantly found all throughout the plains of India, from Himalaya down to Southern India.The plant Abrus precatorius is used in Ayurveda, Folk, Homeopathy, Sidha, Tibetian and Unani. Its leaves are used as nerve tonic, applied on cuts and swellings and mouth ulcer. Abrus precatorius is also used as laxative, sedative and aphrodisiac Qadry et.al (2005).The roots Samy et.al (2008) are used for gonorrhoea, jaundice and haemoglobinuric bile. The oil extracted from seeds is said to promote the growth of human hair. The leaves are used for their anti-supportive properties Rastogy and Mehrotra (1998). The plant is considered as a valuable source of natural products for development of medicines against different diseases. The roots, seeds and leaves are used in traditional folklore medicine (Choi et.al 1989). The leaves are used for their anti-supportive properties Rastogy and Mehrotra (1998).Decoction of leaves is taken orally for cough and flu (Nadkarni and Nadkarni (1954).Chakre (1948).Chopra et.al (1956).).

The propagation of Abrus precatorius (Red seed) and Abrus precatorius (White seed) by using seed germination methods. Interestingly the results regarding the use of seed age, showed variability in the plant growth and successively on significant seed growth. In order to have uniformity in the plant community use of seed propagation technique was made and the results are worth appreciable for mass multiplication. Seeds of this species posses seed dormancy and restricts germination to overcome unfavorable environmental conditions. So the aim of the study is to remove seed dormancy and enhance germination capacity within a short period. To overcome the problem of dormancy, the experiment was carried out to investigate the Comparison of viability and dormancy between the methods studied in Abrus precatorius (Red seed) and Abrus precatorius (White seed)

Materials And Methods.

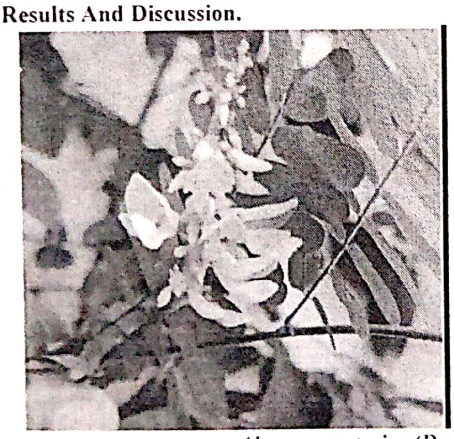
Collection Of Seed Material.

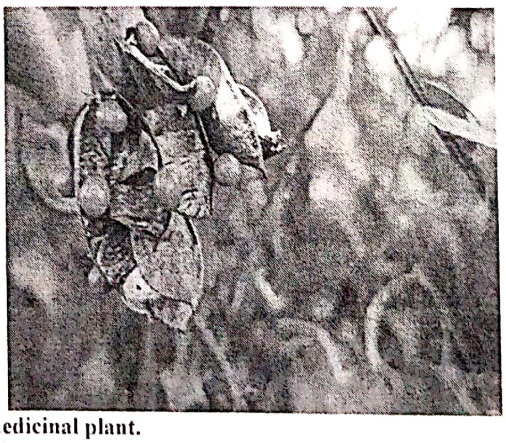
In the present study,seeds of the Abrus precatorius (Red seed) and Abrus precatorius (White seed) were collected from different locations of Jalna district. Collected seeds were then packed in sterile polythene bags in first week of June 2019.

Treatments of Seeds.

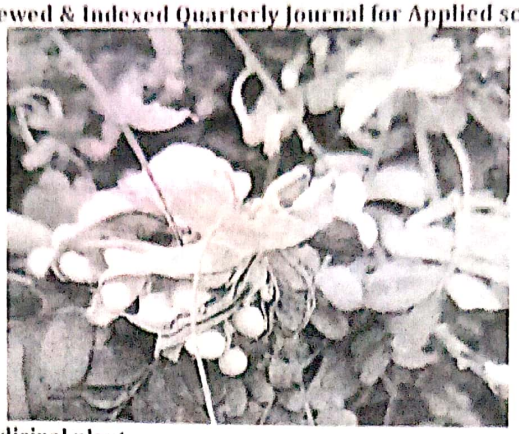
Seeds were first surface sterilized for 1 minute in 0.1 % HgCl2 solution for 5 minutes and subsequently washed with water. The experiment was arranged as a completely randomized design with three replications for each treatment. Seeds were selected with different age.Germination was measured daily for 60 days. All plants were harvested to determine percent germination, shoot length and root length.

Results And Discussion.

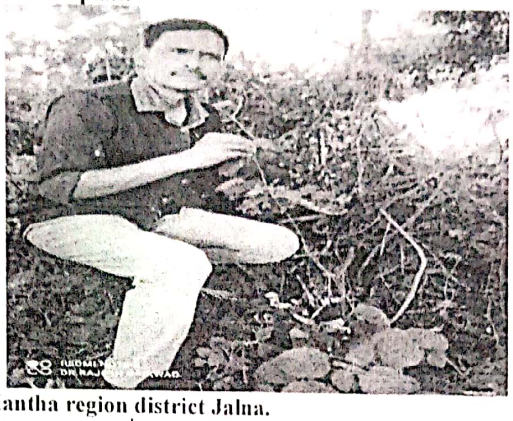




***Abrus precatorius* (Red seed) medicinal plant.**

Abrus precatorius (White seed) medicinal plant

Collection of *Abrus precatorius* seeds from Mantha region district Jalna.

In order to understand the Comparison of viability and dormancy between the methods. The Comparison of viability and dormancy between the methods of *Abrus precatorius* (White) and *Abrus precatorius* (Red) were used for germinability. It is clear from the results given in table 1 that the seeds with hot water treatment shows maximum germinability in case of both the seeds.

The seeds germinability was constant up to 60 days in red seeds and was found reducing in case of white seeds. Similarly after 60 days there was reduction in percent germiniabilty in white seeds.

Effectiveness of different seed dormancy breaking mechanism in the red seed variety of Abrus *precatorius* was analyzed by Pallavi et al. (2014) and observed that damaging the seed coat by nicking enhanced germination from 32 to 84%.

Similar results of enhancing seed germination in A. precatorius by various scarification methods were obtained by Pallab and Thushar (2014).

Table 1: Comparison of viability and dormancy between the methods studied in *Abrus precatorius* (White seed) and *Abrus precatorius* (Red seed).

Seeds	Percentage of Germination											
	Treatments											
	Conventional Methods			Soaking Treatment			Hot Water Treatment			Mechanical Scarification		
	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3
A1	50	6	12	50	09	18	50	10	20	50	04	08
A2	50	08	16	50	10	20	50	12	24	50	06	12

A1: *Abrus precatorius* (White seed), **A2:** *Abrus precatorius* (Red seed).
P1: Total Number Of Seeds, **P2**: No Of Seeds Germinated, **P3**: Percentage Of Germination.

Table 2: Effect of seed age on seed germination and seedling growth in *Abrus precatorius* (White seed) and *Abrus precatorius* (Red seed).

Seed age (month)	Medicinal plants					
	Abrus precatorius (White seed)			*Abrus precatorius* (Red seed)		
	Mean					
	Percent Germination	Shoot length (cm)	Root length (cm)	Percent Germination	Shoot length (cm)	Root length (cm)
1-6 Month	50	15.28	11.72	63.33	15.81	10.52
12 Month	30	13.32	10.42	53.33	14.24	9.35
24 Month	00	00	00	30	8.96	8.24

In order to understand the effect of seed age on the germinability. The seeds of *Abrus precatorius* (White) and *Abrus precatorius* (Red) of different age were used for germinability in pot soil. It is clear from the results given in table 2 that the seeds with age 1-6 month shows maximum germinability in case of both the seeds. The seed germinability was constant of both the seeds. The seeds germinability was constant up to 1-6 month in red seeds and was found reducing in case of white seeds. Similarly after 6 to 24 months there was reduction in percent germiniabilty in white seeds while total loss of germinability in white seeds.

Conclusions.

The results of the current investigation reveal that pre-sowing treatment of seed plays important role to enhance the seed germination under nursery conditions. Among the pre-sowing treatments, the seeds with hot water treatment, mechanical scarification and the seeds with age 1-6 month shows maximum germinability. In case of both the seeds may be recommended for plantation programme.

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