

***In vitro* Seed Germination Studies of *Lavendula officinalis* Chaix**

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ABSTRACT

In order to break the dormancy of the lavender seeds an efficient protocol was carried out under invitro laboratory conditions. The seeds were washed with 0.1% mercuric chloride for 5-7 minutes and then with 70% alcohol for 1 minute. Then seeds were thoroughly rinsed with double distilled water. After washing, the seeds were divided into petriplates, each petriplate receives at least a group of sixteen seeds on a moist paper and the seeds were separately subjected to various treatments. For each treatment two replicates were used. A set of control was kept to compare germination efficiency. After the above treatments the seeds were kept under investigation for 25 days and the seeds were treated with distilled water regularly. Seeds for each treatment were kept in the lab conditions (average temperature 15-20°C). Replicates were monitored and details were recorded.

Key words: *In vitro* Seed Germination, *Lavendula officinalis*.

INTRODUCTION

Lavendula officinalis Chaix is among the most important aromatic plants of now-a-days. *Lavendula officinalis* Chaix syn. *Lavendula angustifolia* Mill. (Family lamiaceae) is one of the most important aromatic plants in France, Spain, Bulgaria and Russia. The plant was introduced in Kashmir in 1983 and its cultivation and processing for essential oil and dried flowers was quite successful (Tajjudin et al., 1983). *Lavendula officinalis* is a perennial, bushy shrub 50-80cm in height have an economic plantation of 12-15 years. The plant forms annual straight non branching four edged floriferous stalk, terminating in ear shaped floscule. Plants produce flowers once in a year for 30-40 days during June to July. The clyx is tubular with longitudinal ribs; corolla is bilabial and falls after blossom. Leaves are green, situated in opposite pairs and covered with trichomes. In winter only old leaves fall off, so the plants remains green (Anonymous, 1962).

MATERIAL AND METHODS

Seeds were collected from the field gene bank of Indian Institute of Integrative medicine (CSIR) Srinagar and were separately subjected to various treatments.

Sand paper Scarification

Sand paper of "size 100" was used. The seeds were kept between two sheets of sand paper and rubbed six times. After scarification seeds were kept at light and dark conditions.

Sulphuric Acid (H₂SO₄) treatment

Seeds were kept in a muslin cloth and then dipped in concentrated H₂SO₄ treatment for 3 minutes followed by a wash in distilled water. After washing in distilled water seeds were kept at light and dark conditions. Sulphuric acid used was 99.9% pure, Merck's Sulphuric acid.

Chilling treatment

Seeds were subjected to 48 hours chilling

treatment in -20. After chilling seeds were kept at light and dark conditions.

Gibberlic Acid Treatment

- Gibberlic Acid treatment of 200 ppm prepared by dissolving 200 mg of gibberlic acid in 1000 ml of distilled water. The seeds were kept in the solution for about 24 hours followed by a wash in autoclaved double distilled water.

RESULTS AND DISCUSSION

During the present study it was observed that seeds whose seed code was scarified with sand paper showed 6.25% of germination in light Fig. 1 (Table 1, Graph 1). At dark treatments these scarified seeds show same %age of germination i.e. 6.25%. (Table 1, Graph 1).

Table 1: *In vitro* seed germination studies of *Lavendula officinalis* subjected to various treatments

Treatment	No. of seeds germinated in light & darkness		% germination in light & darkness	
Control	0	0	0	0
Sand paper Scarification	1	1	6.25	6.25
Acid Wash (3 min)	2	1	12.5	6.25
48 hours chilling	4	3	25	18.75
GA ₃ 200ppm	5	2	31.25	12.5

Seeds washed with sulphuric acid showed 12.5% of seed germination in light. Fig. 2 (Table 1, Graph 1). At dark treatment the seeds treated with sulphuric acid showed 6.25 % of germination. (Table 1, Graph 1).

Seeds subjected to 48 hours chilling treatment showed 25% of germination in light. Fig 3 (Table 1, Graph 1). The dark treatment showed 18.75% of germination. (Table 1, Graph 1).

Maximum germination in light i.e. 31.25% was observed in seeds treated with GA₃ Fig. 4 (Table 1, Graph 1). GA₃ treated seeds at darkness showed 12.5% of germination. (Table 1, Graph 1).

The relevance and significance of different seed treatments such as soaking before sowing for breaking dormancy and improving seed germination is well known. Seeds of *lavendula officinalis* subjected to scarification showed 6.25% germination in light and same percentage of seed germination was recorded in complete darkness. Seeds of *lavendula officinalis* subjected to acid wash

showed 12.5% germination in light. Similar studies have been observed in *Atropa belladonna* seeds treated with sulphuric acid (75%) followed by sodium hydroxide (30%) recorded seed germination.

Best results (31.25%) were recorded in seeds treated with GA₃ (200ppm) in ordinary light and 12.5% of seed germination was recorded in GA₃ seeds kept in complete darkness.

During the present work the percentage of seed germination was more in the seeds kept in light as compared the seeds subjected to dark treatments. The relationship of seed size / seed germination with light requirements has also been observed in germination of *hyptis suaveolens* seeds by Felipe *et al.*, (1983).

During the study of seed germination of this plant it was also observed that the gibberlic treatment without pre-freezing significantly increased the percentage of seed germination as was observed by Aoyama *et al.*, (1996) on lavender seeds.

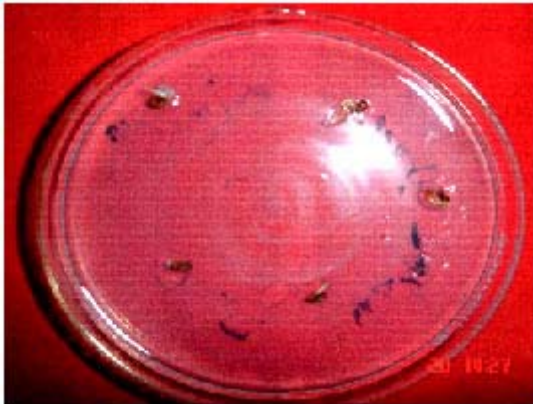


Fig. 1:



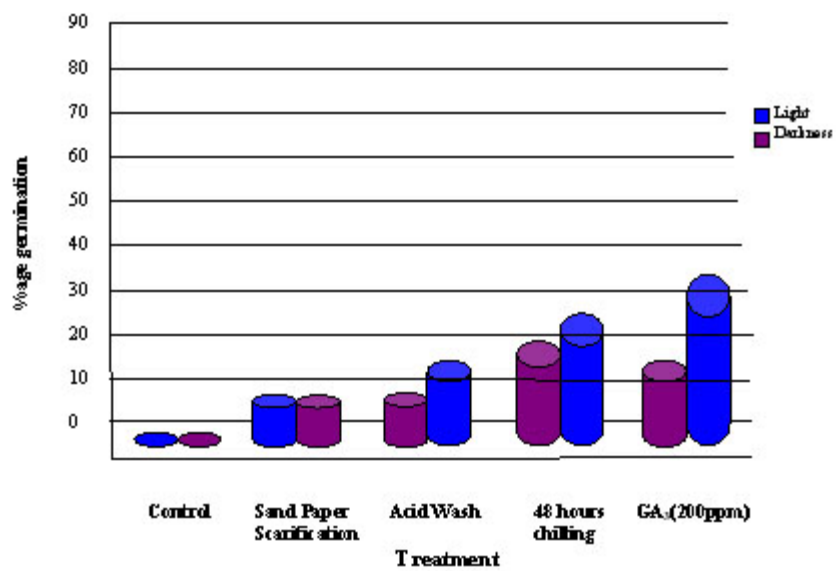
Fig. 2:



Fig. 3:



Fig. 4:



Graph 1: Percentage of germination in seeds of *Lavendula Officinalis* Chaix

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