

Storage dependent changes in the viability status of seeds of *Elsholtzia eriostachya* (Benth.), a medicinal herb of Pattan valley of Lahaul and Spiti, Himachal Pradesh India

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Abstract

Elsholtzia eriostachya (Benth.) is an important medicinal herb which is present in a cold desert of Himachal Pradesh. The *elsholtzia* sp. is used to treat cuts and burns by the native population of Lahaul and Spiti. All the parts of the plant are used as medicine. The present study is based upon assessment of storage dependent changes in the viability status of seeds of this medicinal plant.

Keywords: Medicinal Plant, Storage, Population, Viability, Seed

1. Introduction

The present study is focussed on storage dependent changes in the viability of seeds of *Elsholtzia eriostachya* which is a strong scented annual herb. This plant is present in pattan valley of Lahaul and Spiti is an aromatic erect mint like annual herb. The leaves are oblong to lanceolate in shape. the flowers are tiny and yellow in colour. The seeds of *E. eriostachya* are ovoid, oblong and ellipsoid in shape. Fruits usually 4 dry nutlets. The nutlets are sparsely hairy, tuberculate or smooth. The seeds are very scented with or without endosperm. The seeds of *E. eriostachya* is harvested in month July-September. All the body parts are used as a medicine. *Elsholtzia* sps are used to treat cuts and burns by the people of Lahaul and Spiti (Melkani et al., 1994).

2. Materials and methods:

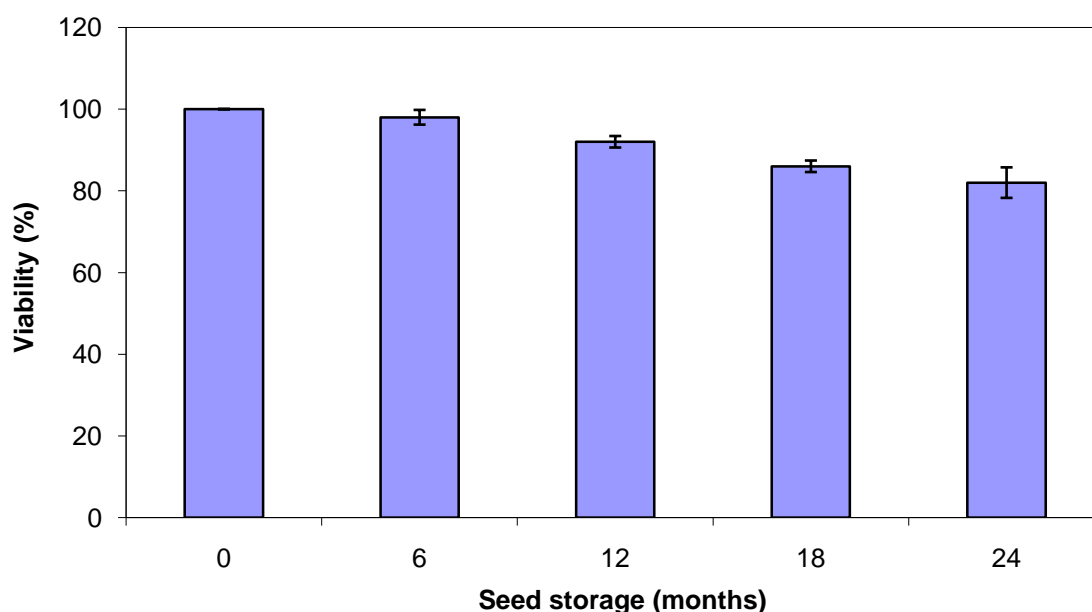
The seeds of *Elsholtzia eriostachya* were collected from the wild and separated manually. The seeds were air dried for a fortnight and were stored in plastic air tight jars for further studies. Seeds of this medicinal plant species were collected from Pattan valley located in Himachal Pradesh, during August-september. Seed viability was determined, qualitatively using a biochemical test “Topographical Tetrazolium Test”.

In this reduction process, the living cells are made visible by the reduction of an indicator. The indicator used is a colourless solution of 2,3,5-triphenyl tetrazolium chloride. The seeds were surface sterilized with 0.1% aqueous solution of mercuric chloride for 3 min. Thereafter, they were washed thoroughly under tap water and soaked in distilled water for 24 h at $25 \pm 2^\circ\text{C}$. Thereafter, the seeds were cut off 1/3rd at the broad end opposite the radicle in order to expose the embryos. Then the seeds were soaked in 0.1% aqueous solution of TTC at $25 \pm 2^\circ\text{C}$ in dark. After 24 h, qualitative viability was determined by counting the coloured embryos. Seeds having a completely stained embryo were considered viable. The experiment was done in triplicate taking 30 seeds of each species studied. The measurements were taken as percent viability.

3. Results and discussion: The viability status was assessed after a regular interval of 6 months and up to a storage period of 24-months. Freshly harvested seeds of *E. eriostachya* exhibited 100% viability when incubated with 0.1% TTC solution for 24 h in dark. The described viability (100%) status was maintained for a period of 6 months and thereafter, a slow but steady decline in viability was observed. After 6, 12, 18 and 24-month storage, a 2, 8, 14 and 18% decrease in seed viability was recorded as compared to freshly harvested seeds. The freshly harvested seeds exhibited 100% viability, while 6, 12, 18 and 24-month storage seeds showed 98, 92, 86 and 82% viability respectively (Fig. 1).

The essential oil of *Elsholtzia* plants exhibited antibacterial and antifungal properties (Bestmann et al., 1997). Essential oils extracted from *E. splendens* possess good antibacterial as well as anti-inflammatory activities against acne-inducing bacteria, whereas inducing no cytotoxicity with human cell lines (Kim et al., 2008). *E. splendens* also possesses antioxidant effect (Jeong et al., 2005). Thus this is a very important medicinal species and possesses a high viability status which is maintained for a storage period of 24 months. If proper research is done on this medicinal plant, then It would be a good alternate in the treatment of many diseases.

Fig.1



References

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