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Original Research Paper

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HIGH VIABILITY STATUS OF FRESHLY HARVESTED SEEDS OF ELSHOLTZIA ERIOSTACHYA (BENTH.), A MEDICINALLY IMPORTANT PLANT SPECIES OF TRANS-HIMALAYA

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ABSTRACT *Elsholtzia eriostachya* (Benth.) is an important medicinal herb which is also known as pussilla. The whole of the plant is used as medicine. This herb belongs to family lamiaceae which is also known as a family of scented herbs. The *Elsholtzia sps.* is very useful in menorrhazia and pathogenic diseases in uterus. The present study is based upon assessment of viability status of freshly harvested seeds of this medicinal plant.

KEYWORDS : Medicinal Herb, Pathonenic Diseases, Viabilty, Seed, Harvested

INTRODUCTION

The present study is focussed on viability of freshly harvested seeds of *Elsholtzia eriostachya* belongs to family Lamiaceae, (Kachroo, 1977) also known as 'pusilla' which is a strong scented annual herb. It is an aromatic erect mint like annual herb about 15-37 cm tall, purple red in colour .The seeds of *E. eriostachya* are brown in colour. The length of seed is approximately 2 mm and diameter is 1.5 mm (Plate 1). They 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 harvesting season of *E. eriostachya* is July to September. The weight of each seed is 1.6 -1.8mg

PLATE 1. Photographs of seeds and young plants of *Elsholtzia eriostachya*

MATERIALS AND METHODS:

Seed collection

The seeds of above said plant species were collected from the populations growing in the wild and separated manually. The seeds were air dried for a fortnight at room temperature after which they were stored in plastic air tight jars at room temperature for subsequent studies. Seeds of this medicinal plant species were collected from Pattan valley located in Lahaul and Spiti district, Himachal Pradesh, during August-September.

Viability Test

Seed viability was determined, qualitatively and quantitatively, 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.

Qualitative viability test:

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±2°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± 2°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.

Quantitative viability test:

The TTC assay conducted as above was extended to get an idea about the amount of TTC reduced by embryos/seeds. Thus, the seeds/embryos treated with TTC were homogenized in MetOH. The homogenate was centrifuged at 10,000 rpm for 10 min to remove the debris; volume was made to 5 ml with MetOH and absorbance read at 485 nm. The TTC reduction was expressed as A_{485}/30seeds or A_{485}/5 embryos depending upon the species.

RESULTS AND DISCUSSION:

Seed viability of *E. eriostachya* was determined shortly after collection/harvesting (1 month old) by using 2, 3, 5-triphenyl tetrazolium chloride (TTC) test. Both qualitative and quantitative assessments were made.

Qualitative viability assessment

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.

Quantitative viability assessment

In quantitative viability test, the magnitude of TTC reduction by seed tissue (including embryo) in terms of the formazan formed (A_{485} of MetOH extract) was determined in freshly harvested seeds (1 month old). TTC reduction is an indicator of the metabolic status of the seed tissue and also that of seed vigour. In *E. eriostachya* seeds, the quantitative ability of the seed tissue to reduce TTC decreased gradually with the progression of storage period (Table 1).

Table 1. Viability status of *E. eriostachya* seeds

Qualitative viability	Quantitative viabilty
100%, ±0.00	0.449, ± 0.02

This plant species contains an essential oil containing of *Elsholtzia* ketones, thymol, monoterpenes (Bestmann et al., 1995) which is attributed to its high medicinal property and moreover high viability of this plant can be utilized to grow this plant on large scale and as an alternate to cure many ailments without any side effects.

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