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IN VITRO SEED GERMINATION STUDIES ON *SIDA SCHIMPERIANA* HOCHST. EX A.RICH. A RARE MEDICINAL PLANT

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ABSTRACT: The present investigation deals with the *In vitro* seed germination of *Sida schimperiana* belongs to the family Malvaceae. It is an important medicinal plants used for many liver diseases.The seed germination was conducted in three different methods such as sulfuric acid treatment, MS medium sublemented with GA_3 and stratification technique. The highest percentage of seed germination (80%) was obtained in the treatment of MS medium sublimated with $GA_3$2.0mg/l. The germinated seeding was transfer in to the MS medium for the further investigation.
Key words: *In-vitro* seed germination, sulfuric acid, Gibberellic acid, stratification.

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INTRODUCTION

Sida schimperiana Hochst.exA.Rich.Belongs to the family *Malvaceae*. It is anannual subshrubslive in terrestrial place.*Sidaschimperiana*is a very important medicinal plant and used for the following diseases. Prenatalabortion, Internal worms, Amoebic dysentery, Cough, Influenza and Liver disease [1]. Most species of *Geramiaceae* and *Malvaceae*produce seeds with a water-impermeable seed coat. Seeds that cannot germinate under conditions otherwise favorable for germination (of non-dormant seeds) are termed dormant [2,3]. Several factors are responsible for seed dormancy, and, depending on the taxon, seeds require specific conditions to overcome it and germinate. Kinds of seed dormancy have been classified by several scientists [4]. However, developed the first comprehensive classification system for seed dormancy, which was based on the causes of seed dormancy and how to break it [5]. [2,3] modified Nikolaeva's system, and it now appears that the modified system is being widely used and accepted by seed scientists.

MATERIALS AND METHODS

Sida schimperiana Hochst. ex a.rich. Werecollected in Keeranur village of Pudukottai district, Tamil Nadu.The plant specimen was identified with help of Rapinat herbarium (RTH) St. Joseph's college, (Autonomous), Tiruchirappalli.

Germination Stimulators

Several chemicals are known to increase seed germination. These chemicals are usually applied after seeds are fully hydrated. In general, only seeds with internal dormancy receive this treatment. Germination stimulators include gib-berellic acid, ethylene, smoke, potassiumhydroxide and sulfuric acid treatment [6].

Sulfuric acid treatment

Sulfuric acid is most commonly used on species with very thick seed coats and with stony endocarps that surround the embryo it has been used on some species of *Acacia*, *Albizia*, *Cassia*, *Leucaena*, *Parkinsonia*, *malvacae* and *Terminalia* [7]. Treatment length varies with the species and often among seed sources and it must be carefully monitored because seeds can be destroyed if the treatment is too long. If acid is being diluted in water, the acid must be added to the water, never add water to acid when water is added to acid, heat will be released, risking an explosion and other dangers. Some species have thick seed coats but can easily be damaged by sulfuric acid. Instead, citric acid or sodium or calcium hypochlorite baths with longer treatment durations may be used. Sulfuric acid 1ml in 100 ml distilled water make up with soaking in 20min.Then wash the seed in distilled water 5min.

Seed treated with sulfuric acid requires the following procedures:

Treat seeds that are dry and at room temperature.Require workers to wear safety equipment, including face shield, goggles, thick rubber gloves, and full protective clothing. Immerse seeds in an acid-resistant container, such as a glass, for the duration required.Stir seeds carefully in the acid bath; a glass rod works well. Remove seeds from the acid by slowly pouring the seed-acid solution into a larger volume of cool water or tap water, ideally one in which new, fresh water is continually being added.Stir seeds during water rinsing to ensure all surfaces are thoroughly rinsed clean.

Gibberellic Acid

Gibberellic acid is the most important plant hormone for the regulation of internal seed dormancy and is often used on seeds with complex internal dormancy and with those species having underdeveloped embryos. *Sidaschimperiana*is a species that has been successfully germinated using Gibberellic acid. Mature of plant seed were collected from three to four month plants. The plant seed coat was removed with the help of needle and foreceps.The coat removed seeds were transferred in to MS medium sublemented with different concentration of GA_3.

STRATIFICATION

Moist Treatment

Warm, moist treatment enhances after-ripening of seeds with underdeveloped embryos. Warm, moist treated seeds are kept at temperatures of 72 to 86°F (22 to 30°C) for a period of time, usually in moist peat moss, sawdust, or other substrate. Although warm, moist treatments are not commonly used on tropical species, it can be considered for seeds with morphological or physiological seed dormancy.

STRATIFICATION

Stratification (cold, moist treatment) is used on seeds with internal dormancy from temperate areas, or high-elevation habitats in tropical regions [8]. Some subtropical species may also benefit from a period of cool, moist stratification.This technique may be preferred if the species has double dormancy (requires both a warm, moist treatment and stratification), requires a very long stratification or requires low temperatures or fluctuating temperatures for a long period of time. Conversely, "artificial" stratification involves placing seeds under refrigeration at 34 to 38 °F (1 to 3°C) for a period of time. Artificial stratification has several advantages: (1) It allows for a routine check of seeds to ensure they are moist and not moldy, (2) A large number of seeds can be stratified in a small space, and (3) seeds or seed lots that begin to germinate can be removed from the treatment and planted in the nursery as they become available.

Artificial stratification of small seed lots and small seeds, seeds can be placed between sheets of moistened paper and inserted in an opened plastic bag in flats with drainage holes. Paper towels need to be moist but not waterlogged, and seeds need to be evenly spread across the moist paper towel to help prevent molding. Inthis method seed germination more or less 45%, grown in the filter paper (Warm, Moist Treatment).Then move to the MS medium.

RESULTS AND DISCUSSION

All thethree treatment such as sulfuric acid treatment, Gibberellic acid treatment and stratification methods. The maximum seed germination of 80% was observed from MS medium sublemented with GA_3 2.0 mg/L (Table 1 & Figure 1-3). Treatment with sulfuric acid showed only 50% germination followed by stratification method (moist treatment) which germination was 45%, similar such findings were rewarded by several workers in various crops [9,10].

Table: 1-Seed Germination experiment.

S.No.	Experiment	Percentage of response(%)
1	Chemical stratification sulfuric acid (1ml) (100ml).	50
2	Gibberellicacid treatment. $GA_3$2.0mg/l + MS Medium.	80
3	Stratification method (moist treatment)	45

Figure-1: Germination of *Sida schimperiana* seeds with sulfuric acid treatment.

Figure-2: Germination ofseeds with Stratificationmethods (moist treatment).

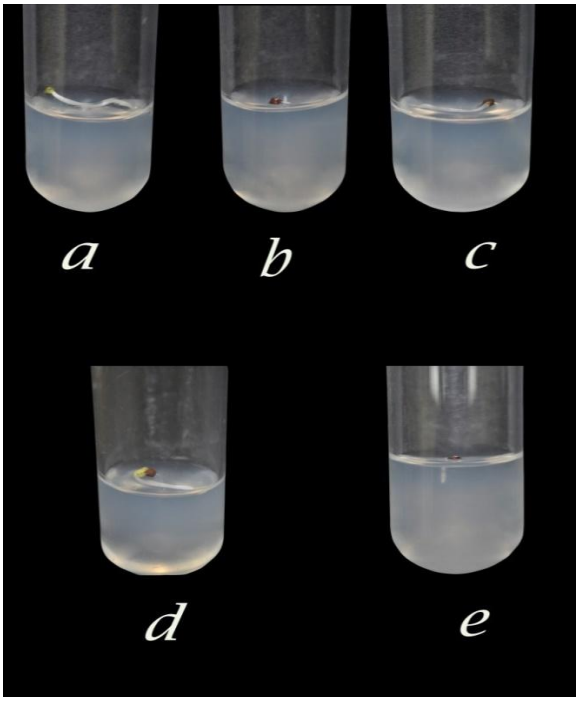

Figure: 3 *In Vito* seed Germination in MS medium supplement with GA_3.

CONCLUSION

The present investigation reveals that the*in vitro* seed germination of *Sida schimperiana*among the three different treatments GA_3 2mg/l+ MS medium shows better germination. In these protocols useful for the Regeneration studies of *Sida schimperiana*.

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