

Effect of Light vs. Dark on Seed Germination of *Hedychium Spicatum* Smith

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Abstract: The objective of Present study was to examine the effect of lights on seed germination of an important and vulnerable high value medicinal plant, using this simple and significant study we could propagate a large number of seedlings of this species under laboratory as well as nursery conditions. The results of this study are anticipated to helpful in developing long term conservation strategies for the medicinal herb species.

Keywords: Ayurvedic, Yunani, Germination, Himalaya, Kapoor Kachari.

1. INTRODUCTION

Hedychium spicatum is an important medicinal perennial rhizomatous herb up to 1m height. It is an erect herb with stout aromatic rhizome. The rhizome is quite thick, up to 7.5cm in diameter, aromatic knotty, spreading horizontally under the soil surface, grey brown in colour with long, thick fibrous roots, flower pinkish white in colour and arranged as spike. *Hedychium spicatum* is commonly known as spike ginger lily and belongs to the family Zingiberaceae. In Ayurveda, it is known as ‘Kapoor Kachari’ (Rana *et al.*, 2004; Bisht *et al.*, 2009).

Hedychium spicatum is used in Ayurvedic and Yunani medicine as aromatic oil. The rhizomes are considered useful as stomachic, carminative and stimulant for the treatment of liver complaints, diarrhea, food poisoning, inflammation, asthma pains, bronchitis, brain tonic and snake bite (Dhar *et al.*, 2002). Rhizome powder is sprinkled as an antiseptic agent and also used in various aches and pains. A famous perfume *Abir* is obtained from the rootstock. The rhizomes are also considered to have insect – repelling properties and used for clothes preservation. The essential oil can be used as performed for shop, hair oils and as face powdered. Locally rhizomes are boiled as eaten with salt and roasted powdered is given for curing asthma. Seeds are believed to cause an abortion, decoction of the rhizome with *Deodar* sawdust is taken for tuberculosis (Gaur 1999).

2. MATERIALS AND METHODS

Three month old seeds of *Hedychium spicatum* (2n= 12) collected from Bharsar (Pauri Garhwal) were used in this study. Dry seeds were sterilized with mercuric chloride (0.2%; 20⁰ C) for 8 min. followed by rinsing with sterilized distilled water for 30 min, seeds were than immediately put for germination on thick moist filter sheet in Petri dishes and were allowed to germination at room temperature (10 – 22⁰C) during January to March. One set of petridishes were placed under continuous dark condition and other set under fluorescent light conditions (10 hrs light, 14 hrs dark), where filter sheets were watered with sterilized distilled water to avoid any contamination. Since seeds did not germinated up to 25 days of sowing, ungerminated seeds were washed with sterilized distilled water and scarified with a sharp testing needle removing the section of seed coat with two to three incision given around the hilum region, thoroughly washed with sterilized distilled water and then maintained under light and dark condition at room temperature. Germination was considered to have occurred when radical emerged. Counts were made at regular intervals the mean percentage of germination was worked out at the end of the experiment.

3. RESULT AND DISCUSSION

Under dark conditions, scarification of section of seed coat resulted in seed germination, after 30 days of sowing and maximum germination (60%) was recorded between 45- 60 days of sowing . whereas, under light condition germination was very poor (8.89%) during this period. However, in control

(unscarified) absolutely no germination was noticed even after 120 days of sowing. Nevertheless 78.77% and 14.44% germination was recorded after 120 days under light and dark condition respectively. Thus dark treatment gave 41.11 % increase in germination over light treatment at the end of the experiment (Table 1). So far we have tried the effect of several growth regulators, such as IAA GA, IBA, chilling treatment etc (Bisht 2005) to over come the poor and erratic germination of this species. But none of the treatment except seed scarification and dark treatment gave such a high, quick and uniform germination with in shortest period of 45 – 60 days. Moreover the evidence so far available shows that time dependent seed dormancy does not play any significant role in poor and erratic germination of *Hedychium spicatum*. The principal source of hindrance seems to be a hard seed coat, which causes failure of radical to emerge and dormancy factor (s) may reside in the endosperm and or the seed coat (Arumugam and Bhojwani 1990).

Table1. Effect of light vs dark on seed germination (%) in *Hedychium spicatum*

Treatment	Germination % after							Total Germination %
	Days							
	30	45	60	75	90	105	120	
Light	0.00	5.56	3.33	1.11	1.11	0.00	3.33	14.44
Dark	1.11	18.89	41.11	4.44	4.44	8.89	0.00	78.88
Control	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. SUMMERY

Effect of light vs dark seed germination of *Hedychium spicatum* is reported. Scarification of seeds and dark conditions during germination favours quick and uniform seed germination of this species as compared to light conditions.

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