IN-VITRO PROPAGATION OF MULTIPURPOSE MEDICINAL PLANT GYMNEMA SYLVESTRE R. BR. (GUDMAR)

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ABSTRACT:

The nature of explant, medium type, plant growth regulators and anti oxidant markedly influenced In vitro propagation of Gymnema sylvestre R.Br. (Gudmer). Propagation of plant is often difficult, expensive and even unsuccessful. Tissue culture method offers an alternative means of vegetative propagation, clonal propagation through tissue culture popularly called micropropagation can be achieved in a short time and space. MS (Murashige & Skoog 1962) basal medium supplemented with various concentrations of Benzyl Adenine(BA; 0.5,1.0,1.5,2.0 mg/1) (growth hormone), sucrose and agar was used in the study. The effect of BA was fund to be highest in the concentration of 1.5 mg/1 recording buds break number upto 10 and at lowest concentration of 0.5 mg/1 recording buds break up to 3.

The medium was autoclaved (at 120° C and 15 lb pressure for 15 minutes) cultures were incubated at 25±2°C under 16 hours photo period from coll white fluorescent tube giving 100 Lux at culture level.

Keywords : MS-Media, Explant, Bud Break.

INTRODUCTION

Gudmar (Gymnema sylvestre R. Br) is Distributed in Asia, Topical Africa, Malaysia and Sri Lanka. Its geographical distribution in India is through out the country, in dry forests up to 600m.

Gymnema sylvestre R. Br. belong to family Asclepiadacea large climbers, rooting at modes, leaves elliptic, acuminate, base acute to acuminate, glabrous above sparsely or densely tomentose beneath. Flowers small, in axillary and lateral umbel like cymes, pedicels long.

Status : M.P. State Department of Natural Resources stated that these plants has been placed under threatened or endangered species, state noxious status and wetland indicator values (S.M. Mishra & B.L. Jharia-2005) In natural state these are found in decan platue, northern and western parts of India,
and occasionally in forests in Central and Peninsular India. Mahableshwar, Bhopal and Raisen in Madhya Pradesh.

Chemistry: The major bioactive constituents of *Gymnema sylvestre* are a group of oleanane type triterpenoid saponins, known as “*gymnemic acids*”. The latter contain several acylated (tigoloyl, methybutyrol etc.) derivatives of deacelgymnemic acid (DAGA) which is 3-0-b

The individual gymnemic a acids (saponins) include gymnemic acids I-VII, gymnemosides A-F, gymnemasaponins etc. The leaves contain tartaric acid, formic acid, butyric acid, anthraquinone, derivatives and gymnemic acid.

The latter contain seneral acylated ctigoloye methybuty (royl etc) derminationes of deacelggmnmeml acid (DAGA)

MEDICINAL PROPERTIES

*Gymnema sylvestre* a plant used both in the ayurvedic and unani medicine (Wahid & Siddiqui 1961). In India for treatment of Diabetes mellitus it has been known from antiquity also to have an anti saccharin taste effect. The active principles are glycosides (several Gymnemic acid) which shows selective anaesthetic effect. The plant is stomachic laxative and diuretic. It is said to be useful in cough, biliousness and sore eyes. The leaves of the plant, when chewed, possess the remarkable property of paralysing for a few hours, the sense of taste for sweet and bitter substances.

The plant is bitter astringent and useful in inflammations, dyspepsia, constipation, jaundice, hemorrhoids, strangury, renal and vesicle calculi helminthiasis, cardiopathy, cough, asthma, bronchitis, intermittent, fever, amenorrhea, conjunctivitis and lucedema. Roots are emetiv and expectorant. This herb is a traditional remedy for snake bite. The powder from the dry leaves is dusted upon the wound. Alterntely, the powder can be made into a paste with water and applied to the wound or decoction may be given internally. The leaves are useful for treating enlarged liver and spleen.

CULTIVATION AND MICROPROPAGATION

*Gymnema sylvestre* is not grown widely by in vivo methods of cultivation. However propagation of plant is often difficult, expensive and even unsuccessful. Tissue culture methods offer an alternative means of vegetative propagation, clonal propagation through tissue culture popularly called micropropagation can be achieved in a short time and space. Thus it is possible to produce *Gymnema sylvestre* in large number starting from a single individual and they.found that it was the only commercially viable approach for propagation. Since then several crop species have been micropropagated and protocols are now established for them.
Green healthy branches of *Gymnema sylvestre* were collected from Motilal Vigyan Mahavidyalaya Bhopal. The explants (axillary buds) were washed with teepol for three minutes. Surface sterilization was done with 0.1% mercuric chloride solution for 5 minutes. The disinfectant was removed by several successive washes with autoclaved doubled distilled water. The cut surfaces exhibiting mercuric chloride damage were aseptically trimmed with a Sharp, Sterile surgical blade.

**MATERIAL & METHODS**

MS (Murashige & Skoog) basal medium supplemented with 3% Sucrose and 1% agar was used in the study. The medium was supplemented with various concentration of Benzyl Adenine (BA; 0.5, 1.0, 1.5, 2.0 mg/1). The pH of the medium was adjusted prior to the addition of the gelling agent. The medium was autoclave (at 120° C and 15 lb pressure for 15 minutes) Cultures were incubated at 25=2° C under 16 hours photo from coll white fluorescent tube giving 100 Lux at culture level. Observation were made at regular fortnightly intervals of and buds break were observed.

**RESULT & DISCUSSION**

The effect of BA was found to be highest the concentration of 1.5 mg/1 recording buds break number upto 10 and at lowest concentration of 0.5 mg/1 recording buds break up to 3 (table). The average length of shoots and number of roots were found to be significantly higher in MS medium, supplemented with hormones. Similar work done by Phukanetal./ Shrivastava and Rajani and Rashmi Pawar, Pratibha Singh and Shagufta Khan.

**Observation Table:**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Hormone Concentration (BA) mg/1</th>
<th>Buds Break</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>MS+0.25</td>
<td>01</td>
</tr>
<tr>
<td>2.</td>
<td>MS+0.5</td>
<td>03</td>
</tr>
<tr>
<td>3.</td>
<td>MS+1.0</td>
<td>06</td>
</tr>
<tr>
<td>4.</td>
<td>MS+1.25</td>
<td>08</td>
</tr>
<tr>
<td>5.</td>
<td>MS+1.5</td>
<td>10</td>
</tr>
<tr>
<td>6.</td>
<td>MS+2.0</td>
<td>09</td>
</tr>
<tr>
<td>7.</td>
<td>MS+2.25</td>
<td>07</td>
</tr>
</tbody>
</table>

Table : Effect of different concentrations of growth regulator (BA, Beneyl adenine) on buds break of *Gymnema Sylvester* (Sampling Fortnightly).
Today so many medicinal plants of commercial importance face extinction due to increase in demand and destruction of their habitats due to urbanization and industrialization. Thus conservation and cultivation of medicinal plants assume great importance. Advantage of ex situ conservation (plant grown outside their habitats) includes easier supply of plant material for propagation, re-introduction, agronomic improvement etc. and also for the secondary metabolites for pharmaceuticals industry.

REFERENCES