

Effect of different explant and hormones on *in vitro* callus induction and regeneration of Pepper (*Capsicum annuum* L.)

A. RAKSHIT^{1*}, S. RAKSHIT², A. DEOKAR², T. DASGUPTA³

¹ NRC on Plant Biotechnology, IARI, NEW DELHI (INDIA)

² Directorate of Maize Research, Pusa, NEW DELHI (INDIA)

³ Dept. of Genetics & Plant Breeding, Faculty of Agriculture, University of Calcutta, KOLKATA, (W.B.) INDIA.

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Chilli (*Capsicum annuum* L.) is an important horticultural crop widely used as fresh vegetable. Developments in plant cell, tissue and organ culture as well as on plant genetic transformation lagged far behind from the other members of the same family such as tobacco, tomato and potato which are frequently used as model systems because of their facility to regenerate organs. Callus was initiated on Murashige and Skoog (MS) medium containing different combinations of growth regulators. Callus derived from cotyledons was white and friable and showed excellent growth. Different media were tried to initiate callus in two varieties Surjamukhi and Bally. With the increase in auxin (NAA) concentration in the media, callusing response increased particularly at 0.1 and 0.5mg/L concentration of Kn and BAP. MS medium containing MS+2.0mg/L NAA or NAA+0.5mg/L Kn+5.0mg/L 2,4-D was the best for callus initiation. For shoot induction 0.5mg/L IAA+ 1.0mg/L BAP showed good response.

Key words: *Capsicum annuum*, Callus, Growth regulators, Vitamins

INTRODUCTION

Capsicum annuum L. commonly known as red chilli, chilli pepper, hot red pepper, tobacco, paprika, etc is an important horticultural crop used as fresh vegetable. Capsaicin (8-methyl-N-vanillyl-6-noneamide), a pungent compound found only in *Capsicum*. In addition, the fruit contains coloring pigments, resin, protein, cellulose etc. *Capsicum* is the richest source of vit C which may be present up to 340mg/100g in some varieties (Purse glove et al 1981). Chilli production is badly affected by various pests diseases like phytophthora root rot, Verticillium wilt, Rhizoctonia root rot and Fusarium wilt (Leonian 1922, Skaggs et al 2000). Plant cell culture offers a promising approach for large scale production of disease free seedlings. The basic steps in tissue culture is to standardize the culture media, hormones and explants combinations to obtain first, undifferentiated mass of cells called "callus" and finally regeneration of complete plants from the induced calli.

Capsicum is a Solanaceous crop but tissue and organ culture as well as on plant genetic transformation lagged far behind from the other members of the same family such as tobacco, tomato and potato

which are frequently used as model systems because of their amenability to generate organs.

Not many reports available on tissue culture studies on Indian chillies. In the present study, the effect of different hormones on *in vitro* callus induction and regeneration of Pepper (*Capsicum annuum* L.) in two popular Indian chilli varieties viz. Surjamukhi and Bally will be reported.

MATERIALS AND METHODS

Two popular *Capsicum annuum* L. varieties, viz. Surjamukhi and Bally were used in this investigation. The seeds were washed thoroughly with 1% SDS for 10 min followed by thorough washing with water for 12 min. The seeds were surface sterilized with 0.1% mercuric chloride for 5 to 8 minutes, rinsed 3 to 4 times with autoclaved distilled water under aseptic conditions. Seeds were inoculated aseptically on MS basal media containing 0.8% agar but devoid of sucrose for germination. Within three to four weeks the well-developed seedlings were formed. Hypocotyls and cotyledons were exercised and utilized for callus induction studies.

Two different media viz. MS (Murashige and