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In vitro establishment and multiplication studies in spine gourd *(Momordica dioica* Roxb*)*

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In micropropagation of *Momordica dioica* Roxb., the axillary bud was found as a best explant than shoot tip for rapid multiplication of three local genotypes comprising of two female (AKSG-5 and AKSG-35) and one male genotype (AKSGM-1). Basal MS medium containing $AdSO_4$ (70 mg/l or 80 mg/l) supplemented with BAP (1.0 mg/l) and NAA (1.0 mg/l) produced maximum multiple shoots (more than 5 per culture) with better growth response.

Key words: Micropropagation, Momordica dioica.

INTRODUCTION

KARTOLI (*Momordica dioica* Roxb) is a cucurbitaceous and perennial vegetable. It is indigenous and well distributed throughout the country (Singh, 1990). Kartoli having tuberous roots, herbaceous climber grown for nutritious Immature tender green fruits. It is unexploited promising vegetable of high nutritional, medicinal and economical value.

High multiplication ratio can be achieved by micropropagation technique, which enables rapid multiplication of disease pest free elite plants within short space and time. (Morel and Martin, 1952).

Considering the importance of spine gourd and need for rapid multiplication of promising local genotypes of two female AKSG-5 and AKSG-35 and one male (AKSGM-1) was attempted for perfect investigations to standardize the technique of micropropagation of Spine gourd Multiplication of elite genotypes through vegetative means will improve the growth rate and production of fruits in shorter span of time. All the conventionally used methods of vegetative propagation have been tried with kartoli but most of the methods have been difficult and inefficient. Thus there is vast scope for clonal selection and micropropagation of elite kartoli. Attempts were made to collect relevant literature on the in vitro multiplication of kartoli and other related crop species. Murashige (1974) has given the stages for invitro propagation as under,

Stage I	:	Explant establishment
Stage II	:	Rapid multiplication of shoots through increased axillary branching
Stage III	:	In vitro rooting
Stage IV	:	Acclimatization and planting out

MATERIALS AND METHODS

The explants of spine gourd i.e., shoot tip and axillary buds were washed under tap water and surface sterilized after washing in 0.1% Teepol detergent for 2 minutes and followed by 0.1% Hgcl2 treatment for 2 minutes. The explants were then washed with sterile distilled water. The explants were then cultured in vitro on MS medium singly or in combination with various concentrations of BAP and NAA for establishment in test tubes (autoclaved at 115 degree C for 25 minutes in an autoclave.) cultures were maintained in a laboratory at 25 degree celcius .The cultures were sub cultured at an interval of 15 days on fresh MS with similar combination. Multiplication studies were carried out i.e. studies on number of multiple shoots in multiplication stage were carried out taking into consideration type of explant and effect of BAP and NAA.Morphological characters were also recorded during this period.

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RESUITS AND DISCUSSION

Number of in vitro shoot per established culture

MS media supplemented with growth hormones was used the observations were recorded in established cultures after 45 days and resulted are presented in Table 1.

From shoot tip explant in AKSG-5 the maximum number of in vitro shoots per culture i.e. 2 shoots per established culture were observed on EM_9 media (MS+BAP 2.0 mg/l + NAA 1.0 mg/l) followed by 1.68 shoots per established culture on EM_5 (MS+BAP 2.0 mg/l) media. Lowest number of in vitro shoots per established culture i.e. 1 shoot per established culture was observed on EM_1 (MS).

From shoot tip explant in AKSG-35 the maximum number of in vitro shoot per culture i.e. 2.02 shoots per established culture was observed on EM_9 media (MS+BAP 2.0 mg/l + NAA 1.0 mg/l) followed by 1.69 shoots per established culture on EM_{13} (MS+BAP 2 mg/l+ NAA 2.0 mg/l). Lowest number of in vitro shoots per established culture i.e. 1 shoot per culture was observed on EM_1 (MS).

From shoot tip explant in AKSGM-1 the maximum number of in vitro shoot per culture i.e. 2 shoots per established culture was observed on EM_{13} media (MS+BAP 2.0 mg/l+ NAA 2.0 mg/l). followed by 1.68 shoots per established culture on EM_8 (MS+BAP 1.5 mg/l + NAA 1.0 mg/l) media. Lowest number of in vitro shoots per established culture was 1 shoot per culture was observed on EM_4 (MS+BAP 1.5 mg/l).

From axillary bud explant in AKSG-5 the maximum number of in vitro shoot per culture i.e. 2.35 shoots per established culture was observed on EM_9 media (MS+BAP 2.0 mg/l + NAA 1.0 mg/l) followed by 2.33 shoots per established culture on EM_{11} (MS+BAP 1.0 mg/l + NAA 2.0 mg/l). Lowest number i.e. 1.31 in vitro shoots per established culture was observed on EM_5 (MS+BAP 2 mg/l).

From axillary bud explant in AKSGM-35 the maximum number of in vitro shoot per culture i.e. 2.68 in vitro shoots per established culture was observed on EM_8 media (MS+BAP 1.5 mg/l + NAA 1.0 mg/l) followed by 2.34 in vitro shoots per established culture on EM_{13} (MS+BAP 2.0 mg/l+ NAA 2.0 mg/l) and EM_9 (MS + BAP 2.0 mg/l + NAA 1.0 mg/l) . Lowest number of in vitro shoots i.e. 1 shoot per established culture was observed on EM_1 (MS).

From axillary bud explant in AKSGM-1 the maximum number of in vitro shoot per culture i.e. 2.70 in vitro shoots per established culture was observed on EM_8 media (MS+BAP 1.5 mg/l + NAA 1.0 mg/l) followed by 2.67 in vitro shoots per established culture on EM_{13} (MS+BAP 2.0 mg/l+ NAA 2.0 mg/l). Lowest number of in vitro shoots i.e. 1.64 shoot per established culture was observed on EM_2 (MS+BAP 0.5 mg/l). None of the media combination gave significant multiple shoots per culture on establishment medium.