B-39: Tissue culture response of three sesame (*Sesamum indicum* L.) genotypes

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Sesame (*Sesamum indicum* L.) is an economically important annual oilseed crop cultivated in tropical and subtropical regions. Selection through conventional methods for crop improvement has so far not been very successful. Tissue culture techniques very often have provided useful variants for breeding programmes. Anther culture is an efficient and rapid method to produce homozygous breeding lines. Therefore attempts were made to induce callus and organogenesis from different explants of 3 promising breeding lines (MB 29 B, MB 29 W and 83-10).

Three different MS based media with different hormone combinations were used for callus induction from anthers at uninucleate stage. The best callus formation was achieved in medium which contained 2,4-D (5 mg l^{-1}), BAP (2 mg l^{-1}) and IAA (2 mg l^{-1}). Among the genotypes studied, the best callus formation could be seen in MB 29 B. The medium containing Chlorophenoxy acetic acid (CPA) instead of 2,4-D produced less callus, but the number of green globular structures produced by these calli were more when transferred to medium without hormones. Their survival was also better. MS based medium supplemented with Tyrosine produced roots on calli.

Two MS based media with different hormone combinations were used for callus induction from leaf and stem explants cultured *in vitro*. Greater callus formation could be seen in medium, which contained 2-4, D (5 mg l^{-1}) and BAP (1 mg l^{-1}). Rapid callus formation could be seen in stem parts, compared with leaves in all breeding lines.

B-40: The effect of growth substances on callus induction and generation of rice anthers

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Doubled haploid methodology has limited application in Indica rice breeding, mainly due to the poor response of this subspecies to anther culture. The response to initiate callus from donor anthers also depends to a large extent on the concentration and combination of auxins and cytokinins in the medium. Therefore, identification of responding varieties and improvement of culture media is important in Indica rice breeding through anther culture.

In this study, 3 *Indica* varieties (AT 354, AT 353 and IR 46) were compared with one *Japonica* variety (Fujisaka). Panicles having anthers at uninucleate stage were subjected to cold pretreatment for 10 days at 8°C. Anthers were plated on 3 induction media (SK1, SK2 and SK3) having SK basal media supplemented with 3 different combinations of 2,4-Diclorophenoxy acetic acid, Naphthalene acetic acid and Kinetin and were incubated in darkness at 25°C. After 8 weeks, the calli were transferred to 2 regeneration media based on MS salts and exposed to a 12 h photoperiod under white fluorescent light. The better response to callus induction in all varieties was observed in SK 1 medium containing 2,4-D (0.75 mgl^{-1}), NAA (2.5 mgl^{-1}) and Kinetin (0.75 mgl^{-1}). Variety AT 354 recorded the highest percentage of callusing (11.32%) followed by Fujisaka (7.61%), IR 46 (6.11%) and AT 353 (5.25%). The highest percentage of green plants were observed in variety 1R 46 (3.88%) Chromosome analysis showed doubling of chromosomes. Variety IR 46 recorded greater percentage of albino plants (5.27%). The *Indica* varieties used in this study are now being used in crosses for obtaining homozygous breeding lines.

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