ABSTRACT

This study was conducted to evaluated anther culture ability of selected Sri Lankan traditional and new improved rice (*Oryza sativa* L.spp *indica*) cultivars, "Behethheenati", "Madathawalu", "Mawee", "Suwadal", At 307, At 308, Bg 300, Bg 358, Bw 361 and Bw 272-6B for utilization in rice breeding.

Several aspects were studied: the genotype factors, the culture medium for callus induction and regeneration and effect of maltose, mannitol and agarose for regeneration from anther derived callus. Results indicated that there were significant ($p<0.05$) differences in callus induction among the different cultivars, and the average of callus induction ability of varieties ranged from 0.00 % to 65.60 %. Of the ten rice varieties tested, "Behethheenati", "Madathawalu", "Mawee", "Suwadal", At 308, Bg 358, Bw 361 and Bw 272-6B produced callus. Bw 361 had the highest (65.60 %) anther response.

Among the three different basic media (M1, M2 and M3) supplemented with the growth regulators 2,4-D 0.5 mg/L, NAA 2.5 mg/L and Kinetin 0.5 mg/L, M1 medium showed the highest callus induction frequency. Interaction effects of genotype and medium were significant ($p<0.05$). Genotype Bw 361 was found superior for *in vitro* androgenesis on the M1 medium with sucrose 30 g/L replaced by maltose 60 g/L.

MS medium supplemented with NAA 1 mg/L, and BA 1 mg/L, Kinetin 0.5 mg/L shows higher regeneration response. The frequency of albino shoots was observed to be higher than the frequency of green shoots. Shoot initiation occurred only on media containing sucrose as the carbon source. Agarose appeared to be a better solidifying agent than agar, particularly for green shoot initiation on SK11 medium.

Key words: *Oryza sativa*, anther culture, *in vitro*, regeneration, androgenesis.