

High frequency plant regeneration from mature seed of elite, recalcitrant Malaysian indica rice (*Oryza sativa* L.) CV. MR 219

ABSTRACT

An efficient in vitro plant regeneration system was established for elite, recalcitrant Malaysian indica rice, *Oryza sativa* L. CV. MR 219 using mature seeds as explant on Murashige and Skoog and Chu N6 media containing 2,4-dichlorophenoxy acetic acid and kinetin either alone or in different combinations. L-proline, casein hydrolysate and L-glutamine were added to callus induction media for enhancement of embryogenic callus induction. The highest frequency of friable callus induction (84%) was observed in N6 medium containing 2.5 mg l⁻¹ 2,4-dichlorophenoxy acetic acid, 0.2 mg l⁻¹ kinetin, 2.5 mg l⁻¹ L-proline, 300 mg l⁻¹ casein hydrolysate, 20 mg l⁻¹ L-glutamine and 30 g l⁻¹ sucrose under culture in continuous lighting conditions. The maximum regeneration frequency (71%) was observed, when 30-day-old N6 friable calli were cultured on MS medium supplemented with 3 mg l⁻¹ 6-benzyl aminopurine, 1 mg l⁻¹ naphthalene acetic acid, 2.5 mg l⁻¹ L-proline, 300 mg l⁻¹ casein hydrolysate and 3% maltose. Developed shoots were rooted in half strength MS medium supplemented with 2% sucrose and were successfully transplanted to soil with 95% survival. This protocol may be used for other recalcitrant indica rice genotypes and to transfer desirable genes in to Malaysian indica rice cultivar MR219 for crop improvement.

Keyword: Callus induction; *Oryza sativa* ssp. indica; Mature seeds; Plant regeneration; Recalcitrant