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Somatic embryogenesis and plant regeneration from immature inflorescences of *Pennisetum* purpureum Schumach (Napier grass)

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Key words: Pennisetum purpureum (Napier grass), embryogenic calli, tissue culture, in vitro

Introduction Pennisetum purpureum Schum .(Napier or elephant grass) is a major fodder and energy crop in tropic and subtropical region . Napier grass N51" was introduced to China from US in 1985 . Although the formation of somatic embryos and plants from inflorescence segments of napier grass was reported (Wang and INDRA, 1982), there is a number of difficult problem because of different genotype of each species responding optimally in vitro . This paper describes extensive somatic embryogenesis and plant regeneration from cultured segments of immature inflorescence of napier grass N51", which does not usually set seeds in nature and is principally propagated vegetatively. It will make a possibility of industrial tube seedling production and breed by biotechnology.

Materials and methods Immature inflorescences (1-3 cm in length) of Pennisetum purpureum Schum (N51) were obtained from field in sunny day. After stripping and wiping outside leaves with cotton soaked in 70% ethanol every layer, the inflorescences were dissected out, cut into 1-3 mm segments and placed in trigonal glass bottle on 0.8% agar medium containing 3% sucrose ad different concentrations and combinations of 2 A-D and KT at 3-week intervals . Embryogenic callus was subcultured on the same medium about 4 weeks. Healthy somatic embryogenesis was transferred on differential medium added with 2,4-D and 6-BA .3-leaf plant was grown on root vigor medium supplemented with CPPU and NAA . The basic nutrient media used were MS . The pH of the medium was adjusted to 5 .8 before autoclaving . All cultures were incubated at 26 ~ 28℃ in a growth chamber under 16 h of diffused light.

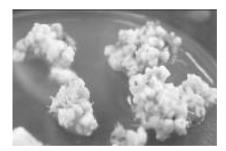


Figure 1 Calli of dry, compact small pellet.



Figure 2 Intact regenerated plantlets.

Results The frequency of callus of compact, small pellet induction reached separately 79 0% and 72 6% in the callus induction medium supplemented with 4.0 mg/L 2,4-D + 0.05 mg/L KT and 4.0 mg/L 2,4-D + 0.1 mg/L KT (Figure 1). During subculture, callus of small pellet were maintained 40 9% and 74 0% in the callus subculture medium added 3 .0 mg/L 2 ,4-D \pm 0.2 mg/L 6-BA . The rate of green plant regeneration of small pellet callus from subcultures reached 36.4% and 38.5%, respectively, in the differentiation medium supplemented with 2.0 mg/L CPPU +0.01 mg/L NAA or 0.5 mg/L KT + 0.5 mg/L IAA . Green plant of regeneration with three leaves was transferred to root vigor medium added 0.5 mg/L NAA in 1/2 MS basic culture medium (Figure 2). The surviving rate of green plant cultured in soil reached above 95%. It was a simple effective method to overcome the obstruction of plant generation by selecting the callus of dry, compact, small pellet in early generation.

References

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