

Callusing and regeneration of three genotypes of *Oryza sativa* ssp. *indica* by 2,4 dichlorophenoxy acetic acid (2,4-D)

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Abstract: Consistent callus induction and regeneration of material cultured *in vitro* is a pre-requisite for somatic cell genetic improvement of plants, through methods such as genetic engineering. This study aims to induce rapid *in vitro* callusing and regeneration on three local rice varieties by exposure to different culture media. When mature embryos were exposed to three levels of 2,4- dichlorophenoxyacetic acid (2,4-D) and one level of thidiazuron (TDZ) (with a short hormone free period in between), all varieties showed rapid regeneration in the absence of a visible callus phase. When the seeds were cultured in 2,4-D for three weeks, at a decreasing concentration of 2,4-D every 7 days, and subsequently treated with TDZ, non-embryogenic calli were obtained that failed to regenerate on hormone free medium. When exposed to 2,4-D for 5 days and subcultured in hormone free medium for two weeks, embryogenic calli and greening were observed within that period. The concentration and period of exposure to 2,4-D are critical factors for callus induction and regeneration in the genotypes tested.

Key words: Callusing, *Oryza sativa*, regeneration, thidiazuron (TDZ) 2,4- dichlorophenoxyacetic acid (2,4-D)