

A7. Evaluation of oat regeneration from mature embryos

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Objectives

The purpose of this study was to develop an efficient method of callus induction and plant regeneration from mature embryo and to evaluate the genotype with high regeneration efficiency to apply for gene transfer method.

Materials and Methods

Materials :

- Plant : Five genotypes of oat, Samhan, Malgwiri, Megwiri, Samgeolgwiri and Swan, were used.
- Callus medium : MS and N6 media were supplemented with different concentration of 2,4-D and kinetin.
- Regeneration medium : MS and N6 media were supplemented with the combination of 0.2 and 1 mg/L of NAA and 1 and 2 mg/L of BA.

Methods : Efficiency of callus induction and plant regeneration from mature seeds of five oat genotypes was evaluated. In addition, to induce root formation, shoots were treated with 200, 350 and 500 mg/L of IBA for 5 seconds and transferred onto half-strength MS medium without growth regulators.

Results and Discussion

Callus induction showed high efficiency in medium containing 3 mg/L of 2,4-D. Though the callus induction among genotypes did not showed significant, Samhan showed high percentage of callus induction compared with other genotypes. Regeneration frequency according to callus induction medium showed significant. Treatment with 3 mg/L of 2,4-D, and 3 mg/L of 2,4-D and 3 mg/L of kinetin in callus induction media showed high frequency for plant regeneration. It appears that the composition of the callus initiation medium may be an important factor for subsequent plant regeneration. Especially, Samhan showed high regeneration frequency. This result supported that plant regeneration was influenced by the genotypes. Treatment with 350 ppm of IBA showed high root induced at 20 days compared with control. All IBA treated shoots exhibited a superior rooting capacity when compared to the control. It also shows the influence of genotype on plant regeneration from mature embryos of oat. An oat regeneration system from mature embryos may provide an effective and convenient explant for plant transformation studies.

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