

Efficient Callus Induction and Plant Regeneration from Mature Embryo Culture of Barley (*Hordeum vulgare* L.) Genotypes

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Abstract : Crop improvement through genetic engineering depends on effective and reproducible plant regeneration systems. Immature embryos are the most widely used explant source for *in vitro* regeneration in barley (*Hordeum vulgare* L.). However, immature embryos require the continuous growth of donor plants and the suitable stage for their culture is also certainly limited. On the other hand, mature embryos can be procured and stored easily; they can be studied throughout the year. In this study, an effective callus induction and plant regeneration were aimed to develop from mature embryos of different barley genotypes. The effect of medium (MS₁ and MS₂), auxin type (2,4-D, dicamba, picloram and 2,4,5-T) and concentrations (2, 4, 6 mg/l) on callus formation and effect of cytokinin type (TDZ, BAP) and concentrations (0.2, 0.5, 1.0 mg/l) on green plant regeneration were evaluated in mature embryo culture of barley. Callus and shoot formation was successful for all genotypes. By depending on genotype, MS₁ is the best medium, 4 mg/l dicamba is the best growth regulator in the callus induction and MS₁ is the best medium, 1 mg/l BAP is the best growth regulator in the shoot formation were determined.

Keywords : barley, callus, embryo culture, mature embryo

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