

# High frequency plant regeneration from mature embryos of an elite barley cultivar (*Hordeum vulgare* L. cv Baegdong)

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## Abstract

An efficient plant regeneration system was developed for *Hordeum vulgare* L. cv Baegdong - an important Korean cultivar. The protocol was based on a series of experiments involving the sizes of mature embryos and the culture media. The embryo size is found to be critical for the establishment of embryogenic callus. Embryos of 1.1-1.5 mm size showed a much higher ability to produce embryogenic callus capable of regenerating green plants. The auxins picloram and dicamba proved effective in inducing callus from mature embryos. 2.5 mg l<sup>-1</sup> dicamba and 4.0 mg l<sup>-1</sup> picloram in Murashige and Skoog's (MS) medium was optimum for the induction of primary callus. The induced primary callus was loose and friable which ultimately developed into creamy white and compact callus after transferring into the fresh medium. Multiple shoots were induced in the MS medium supplemented with 6.0 g l<sup>-1</sup> maltose, 20 mg l<sup>-1</sup> sorbitol, 0.5 mg l<sup>-1</sup> 2, 4-D and 1.0 mg l<sup>-1</sup> kinetin and the rate was 6.5 shoots per embryo. Regenerated plants were hardy and developed roots rapidly in the medium containing 0.2 l<sup>-1</sup> IBA. This efficient plant regeneration system provides a foundation for generating transgenic plants of this important barley cultivar.

**Keywords:** Plant regeneration, Barley embryo, Embryogenic callus, Embryo size