

(05-B-1)

A Protocol for Rapid Multiple Somatic Embryogenesis and Plant Regeneration from Immature Zygotic Embryo in Soybean

Jeong-Suk Bae^{1,3*}, Jae-Keun Sohn², Bong-Ho Lee¹, Suk-Ha Lee³

¹Institute of Bioresources, Gyeongbuk Provincial Agricultural Technology Administration, Andong 760-891, Korea; ² Dept. of Agronomy, Division of Bioscience, Kyungpook National University Daegu 720-701, Korea;

³School of Plant Science, Seoul National University, Seoul 151-742, Korea

Objectives

The objective of this study was to reduce the time scale for multiple somatic embryo induction and the recovery of the plants from immature zygotic embryos

Materials and Methods

Material : Immature cotyledon (2~4 mm)

Cultivar : Jack

Medium : MS salt + B5 vitamin

Culture condition : 26± 1 °C

Results and Discussion

Somatic embryo induction is a critical step for plant regeneration in soybean. Somatic embryos were induced directly from immature zygotic embryos and were observed 3 to 4 weeks after explant being on embryo induction medium. Somatic embryos induced by 2,4-D had many globular stage embryos. Whereas, multiple somatic embryos were formed on low concentration of auxin(20 mg/L 2,4-D) in contrast to other reports(40 mg/L 2,4-D) in soybean. Compared with other protocols, half of concentration of auxin(20 mg/L 2,4-D) resulted in successful somatic embryogenesis and regeneration of plants. The genotypic differences were observed in total embryo induction, with the highest rate(90%) for Fayette, while Pungsannamulkong didn't exhibit any embryo induction. The frequency of somatic embryo was about ten times higher when explants were induced in darkness, in comparison to 16 hours of light. But multiple somatic embryogenesis was found to have high efficiency in culture in the light condition. Germination effects were not statistically significant at different sucrose concentration, although 3% sucrose showed higher shooting and rooting than 2% sucrose.