

P.25 Rapid Multiplication of Somatic Embryos Using Suspension Culture of Soybean

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현탁배양을 이용한 콩 체세포배 급속 증식법

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Objectives

To develop more efficient time-saving systems for proliferation, differentiation and maturation of soybean somatic embryos.

Materials & methods

Plant materials : Lx15, PI96322

Procedure for somatic embryogenesis

Explant (immature cotyledon, 3-4mm long) → Embryo induction
(MSD40, pH 7.3) → Proliferation(I) → Proliferation(II) → differentiation
→ Maturation → Desiccation(1-2 days) → Germination(MS0) → Conversion

* Media used proliferation to maturation

: MSD20, FN Lite, FNL0S3S3, FNL0S3S3GM, MSM6AC, MSM6

Systems for developing somatic embryos

- (1) MSD40 → MSD20 → MSM6AC → MSM6
- (2) MSD40 → MSD20 → FN Lite → (MSD20) → MSM6AC → MSM6
- (3) MSD40 → MSD20 → FN Lite → FNL0S3S3GM → (MSM6)
- (4) MSD40 → MSD20 → FNL0S3S3 → (MSM6)
- (5) MSD40 → MSD20 → FNL0S3S3GM
- (6) MSD40 → MSD20 → MSM6AC → FNL0S3S3GM

Results

The use of liquid-medium-based procedure(No. 5) relative to the solid media(No. 1) led to a 4.5 fold increase in the number of cotyledon-stage embryos. However, the percent of germination was lower. About 71% of the embryos with dicotyledon were continued to develop the roots after desiccation treatment for 2 days and germinated embryos were produced 92 % shoots in 10 days. Of four types of embryos, dicotyledonous ones showed a high frequency of conversion, while only a few ones with fused and horn type developed shoot. The most efficient system for multiplication and development of somatic embryos is number 6 procedure.

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Table. Effect of somatic embryo morphology on germination rate and shoot induction rate after desiccation treatment for 2 days in soybean

	Monocotyledon	Dicotyledon	Polycotyledon	Horn type
Germination rate(%)	73	71	31	57
Shoot induction rate(%) [♯]	48	92	20	3

♯ Number of shoot induced/ number of plantlet germinated ×100

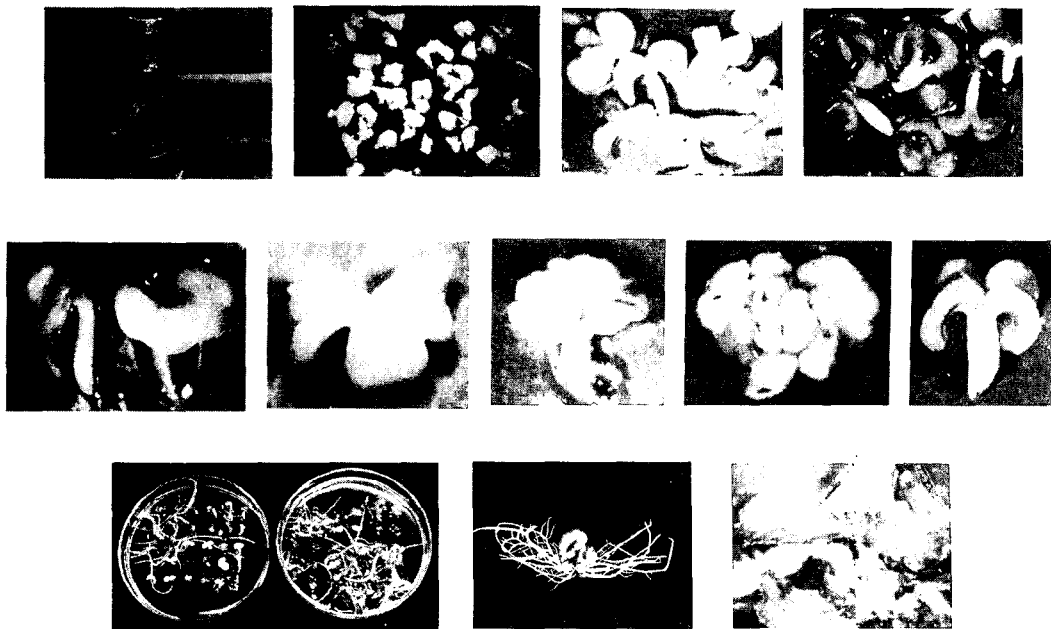


Fig. 1. Somatic embryogenesis from suspension culture of soybean.

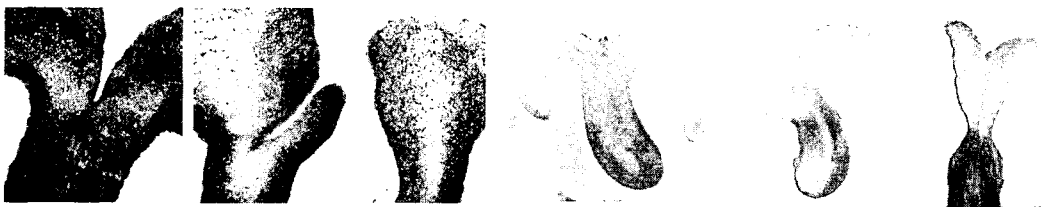


Fig. 2. Longitudinal section of somatic embryos with different shapes of soybean. Some embryos have a shoot apical meristem tissue.