PA34

Somatic Embryogenesis and Plant Regeneration in Barley (*Hordeum vulgare L*)

Honam Agricultural Research Institute : Tae Il Park*, Young Jin Kim, Mi Ok Um, Hong Yul Seo, Jung Gon Kim

Chonbuk National University : Kyung Gu Choi, Song Joong Yun

Objectives

To develop an efficient plant regeneration system using mature embryos for the ultimate use in transformation system in barley.

Materials and Methods

○ Materials : Dooweonchapssalbori and Igri,

○ Methods

- Primary callus induction : 2,4-D or dicamba - 0.5, 1, 2, 3, 4 mg/ℓ
- Embryogenic callus formation : 2,4-D or dicamba - 0.5, 1, 2, 3, 4 mg/ℓ
- Plant Regeneration : IAA and BAP combined with 0, 1, 2, 3 mg/ℓ
- Acclimation system

Plantlets were regenerated from embryonic callus induced from mature embryos, was transplanted to a pot (8×8×7.5 ㎝) filled with vermiculite without aeration. The pots were placed in plastic containers filled with Yoshida's nutrient solution at pH 5.6 and kept at 27℃ under 16/8 hr photoperiod with light intensity of about 150 $\mu molm^{-2}s^{-1}$ for 2 weeks.

Results and Discussion

Commercial cultivars and elite germplasms of barely (*Hordeum vulgare L)* are still recalcitrant to genetic transformation because of the lack of an efficient regeneration system. In this study, we established an efficient plant regeneration procedure from embryonic callus. Callus induction from germinated mature embryos was best in CIM medium (CI medium containing 2.5 ㎎/ℓ dicamba) under dark incubation. Best development of embryogenic callus was obtained in CI3D medium (EC medium supplemented with 3 ㎎/ℓ 2,4-D). The highest regeneration of plants from embryogenic callus was obtained with CIS medium (SI + 1 mg/ℓ IAA and 2 mg/ℓ BAP). The plantlets were successfully established by closed hydroponic system using the nutrient solutions.

Corresponding author : Tae Il Park E-mail : parktl@rda.go.kr Tel : 063-840-2237

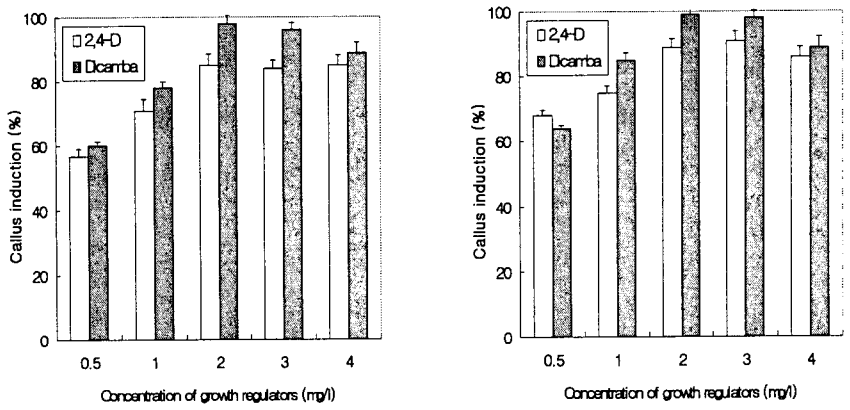

Figure 1. Effect of 2,4-D and dicamba on callus induction from mature embryo on CIM medium after 3 weeks of culture. Dooweonchapssalbori (left), Igri (right).

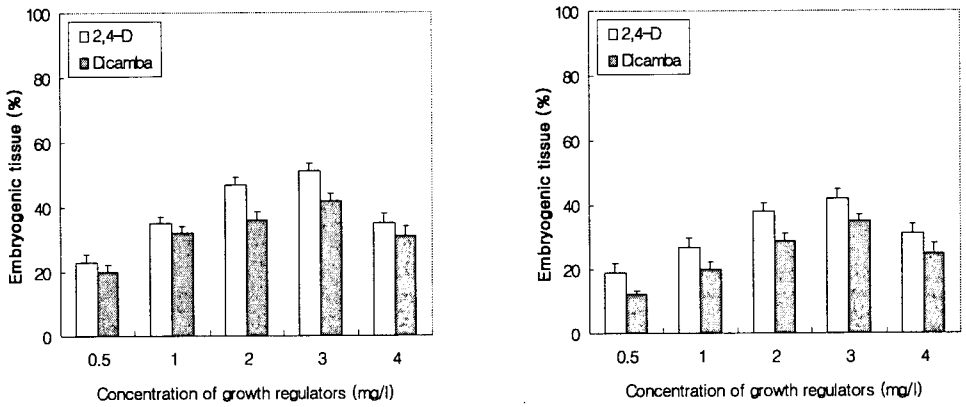

Figure 2. Effect of 2,4-D and dicamba on the development of embryogenic tissues from mature embryos on CI3D medium after 3 weeks of culture. Dooweonchapssalbori (left), Igri (right).

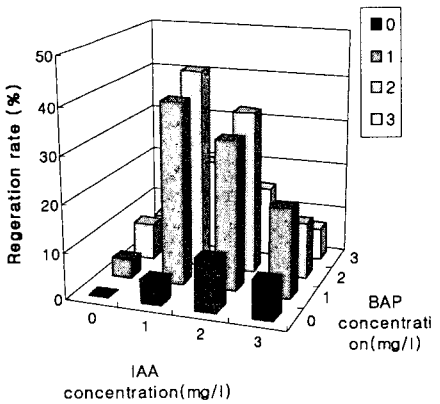

Figure 3. Effects of the combinations of IAA and BAP on plant regeneration from embryogenic calli on CIR medium after 7 weeks of culture (cv. Dooweonchapssalbori).