

P 51

Plant Regeneration through Shoot Organogenesis from Cotyledon in Sesame

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Objectives

The purpose of this study was to develop an efficient plant regeneration system through adventitious shoot regeneration from cotyledon explants of sesame (*Sesamun indicum* L.). On shoot organogenesis from explants, effects of genotypes, germination periods, and light intensities were investigated.

Materials and Methods

1. Plant materials: 6-day-old cotyledon after germination *in vitro*
2. Culture medium: MS medium with 10 mg/L BA, 1.0 mg/L IBA, 1.0 mg/L ABA, 5.0 mg/L AgNO₃
3. Treatments: genotype, germination period, light intensity

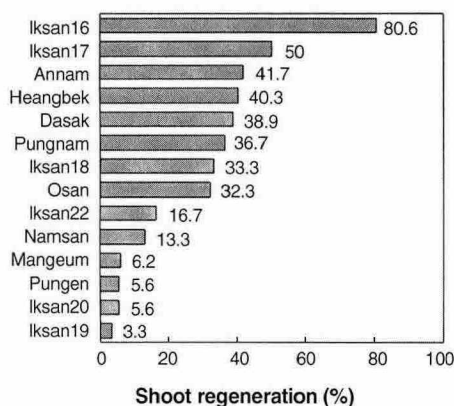


Figure 1. The frequency of adventitious shoot formation from cotyledon segments on different genotypes of sesame.

Results and Discussion

Adventitious shoot formation from cotyledon was observed at midvein region of cut explant after 4 weeks of culture. Differences of regeneration efficiency were found according to genotypes, the highest regeneration frequency was obtained in 'Iksan16' (80.6%). Adventitious shoot formation was largely influenced by light intensity. High light intensity arrested shoot formation and low light intensity caused unusual and vitrified shoot formation. The optimal light intensity was 13 $\mu\text{mol} \cdot \text{m}^{-2} \cdot \text{sec}^{-1}$. Longer period of germination reduced shoot regeneration frequency. Shoot regeneration was promoted when 6-day-old cotyledon explants were cultured under a 16-hour photoperiod. The regenerated shoots were elongated on MS medium with 1.0 mg/L BA and 2.0 mg/L IBA, and the elongated shoots were rooted on 1/2MS medium supplemented with 0.5 mg/L NAA. The plantlet was acclimatized in soil.

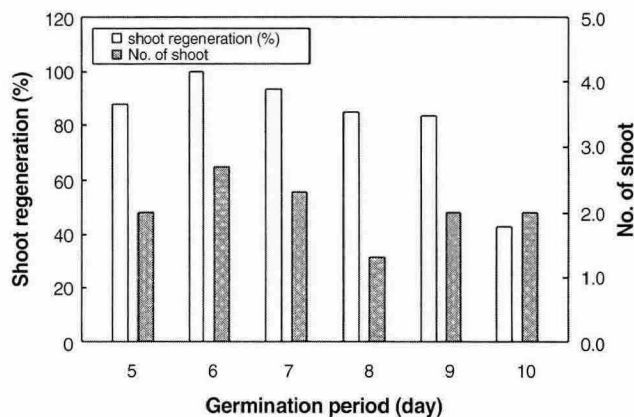


Figure 2. Effects of germination periods on adventitious shoot formation from cotyledon segments of 'Iksan16' sesame.