

# Investigation of callus formation and regeneration of Coker-312 cotton cultivar *in vitro*

Abstract ID: IeCAB011-401b

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## ABSTRACT

Cotton is one of important agricultural and industrial crop plants in the world, but in the last years, decreased cultivation area in Iran. For improvement of cotton breeding program, we can use tissue culture methods, but because of the regeneration difficulties in this crop, an optimized regeneration method in necessary for achievement to this aim. Therefore, this study was conducted to develop an optimize protocol for cotton regeneration *in vitro*. The effect of 5 various hormonal combinations of naphthalene acetic acid (NAA) and kinetin on MS basal medium investigated for callus formation and regeneration of different explants excited from 7-days old seedling of Coker- 312 cotton cultivar. The completely randomized design with three replications was used. Analysis of variance showed significant differences among the hormonal combinations and their interaction on callus formation and regeneration of explants. On the basis of results, the highest and



the lowest percentage of callus formation was obtained from hypocotyls and meristem explants, respectively, but the highest percentage of regeneration (65/2%) was obtained from meristem explant. Also explant \* hormonal combination of medium interaction showed that hypocotyls explants in the non-hormonal MS medium and containing 1 mg/l NAA stood in the first group and had the highest percentage of callus formation, but the higher concentrations of auxins decreased callus formation frequency. Also, high concentration of NAA decreased regeneration percent of meristem explant.

**Key words:** Cotton, Regeneration, Callus formation, *in vitro*, Hormonal combination.

