THE EFFECT OF DIFFERENT HORMONE CONCENTRATIONS ON INDUCTION OF CALLUS FORMATION IN COTTON ANTHERS

M. Korkunc
S. Tasdemir
H. Tekerek
Y. Bolek
N. Sevgin
Kahramanmaras Sutcu Imam University
Kahramanmaras, Turkey

Abstract

Cotton, with its various areas of use, is one of the products that have an important place in the sectors of agriculture, industry and commerce. Among the methods used for the research on cotton plants, tissue culturing is one of the most important ones. However, the desired quality in the research for culturing the anthers of cotton has not yet been reached. The aim of our study was to culture the anthers to be extracted from immature squares in a suitable media by using various concentrations of hormones and to induce callus formation in these cultures.

Three cotton genotypes, Aşkabat-100 (*G. barbadense*), Coker-312 and Stoneville-468 (*G. hirsutum*), were studied for callus induction. Immature cotton anthers with varying lengths (2, 3, 4, 5 mm) were used as the source of explants. MS (Murashige and Skoog) feeding media and various concentrations of oxyne derivatives (NAA, IBA and 2,4-D) and the interactions of different concentrations of Kinetin, BA and TDZ were evaluated. After the samples obtained from the cotton, they were exposed to surface sterilization in antiseptic conditions, the immature anthers found in the squares were extracted and placed in the media with various amounts of different hormones to induce callus formation. Once the anthers were transferred to the induction media, one-hour cold (4°C) shock and one-hour heat shock (40°C) were applied to them, they were kept in dark for a while and were transferred to climate room at 16/24 light regime. All experiments in this study were performed in triplicates.

As the result of the experiments, the highest rate of callus formation was observed in Cooker 312 supplemented with 2mg/mL of NAA and 2 mg/L of BA hormones. Callus formation was also higher in the condition where NAA was used than the media supplemented with 2,4-D. Additionally, callus formation showed better results in cold and heat shock applied anthers compared to the ones that were not shocked.