Effects of different organic additives on in vitro shoot regeneration of Celosia sp.

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Abstract

Nowadays, many researches were conducted in minimizing tissue culture technology due to the overhead of cost needed. The purpose of this study was to investigate the effects of using five kinds of organic additives at four level concentrations responsive to the number of shoots produced for eight weeks in culture. Stem segment explants of Celosia sp. were cultured on MS medium that have been supplemented with different kinds of extract juice that serve as organic additives which are mature coconut, young coconut, papaya, banana and tomato at 20, 30, 50 and 70 ml L\(^{-1}\). The numbers of shoot on each explant were recorded and the mean of ten replicates explants were calculated. Among the media used, young coconut water at 70 ml L\(^{-1}\) induced the highest shoot regeneration (14.21\(\pm\)8.26), followed by mature coconut water at 50 ml L\(^{-1}\) (13.14\(\pm\)10.33). Banana and tomato juice promote highest shoot regeneration of stem segments at 50 ml L\(^{-1}\) that produced 9.57\(\pm\)4.68 and 9.28\(\pm\)5.82 shoots per explants, respectively. While the lowest concentration which at 20 ml L\(^{-1}\) of papaya juice showed highest shoot regeneration (10.50\(\pm\)3.45) produced among the three other concentration tested. Statistical results showed that there were significant differences interactions effects (p<0.05) in terms of number of shoot regenerated between the types of extracts juices determined by ANOVA test. Comparing number of shoots regenerated that were cultured in control media, it showed higher than all of experimental medium composition. There were no big different in cost required in preparation of control media and the experimental media. Applications of five kinds of local fruit in tissue culture media should be considered since it responsive in shoot regeneration.

PMID: 22032084
[PubMed - indexed for MEDLINE]

MeSH Terms, Substances

MeSH Terms

- Celosia\(\text{drug effects}\)\(^*\)
- Celosia\(\text{growth & development}\)
- Celosia\(\text{physiology}\)\(^*\)
- Culture Media
- Culture Techniques\(\text{methods}\)\(^*\)
- Plant Preparations\(\text{chemistry}\)
- Plant Preparations\(\text{metabolism}\)
- Plant Shoots\(\text{drug effects}\)\(^*\)
- Plant Shoots\(\text{growth & development}\)
- Plant Shoots\(\text{physiology}\)\(^*\)
- Regeneration\(\text{drug effects}\)\(^*\)

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