ABSTRACT

Conditions for seed germination were optimized in growth room and 80 % germination was observed in glass jars with two seeds containing 6 ml of double distilled sterile water. *In vitro* grown seedlings,young leaf and shoot tips of 4 years old plant were used as source of explants. An efficient, simple protocol has been developed for best regeneration from cotyledonary leaf of *Jatropha curcas* L. Different concentrations and combinations of plant growth regulators were used and direct and indirect regeneration was observed in different explants of *J. curcas*. Calli were formed from cotylednory leaf, hypocotyls and young leaf of field grown plants on MS medium containing different concentrations of 2, 4-D, BAP and Kin, BAP and IBA as well as Kin and NAA. Different concentrations of BAP and IBA were found to be best for the induction of callus from both cotyledonary leaf and hypocotyls. MS medium containing BAP and IBA when supplemented with growth additives such as 200 mg/L glutamine, 100 mg/L casein hydrolysate and 8 mg/L $CuSO_4$ resulted in higher frequency of callus induction (100%) from different explants of *J. curcas*. Excellent callus growth was observed on MS medium containing 1.5 mg/L BAP and 0.5 mg/L IBA in both hypocotyl and cotyledonary leaf explants. MS medium having 1.5 mg/L BAP, 0.5 mg/L Kin and 0.25 mg/L IBA showed maximum number of shoots i.e. 11 per CL generated callus while 5 shoots were obtained from HC generated callus on MS medium containing 1.0 mg/L BAP, 1.0 mg/L Kin, 1.0 mg/L TDZ and 0.2 mg/L IBA. Direct shoot induction was obtained when CL explants was cultured on MS medium containing BAP (1.0 mg/L) and Kin (0.5 mg/L) the size of leaf doubled along with the formation of multiple shoots from CL explant. However, if IAA was added along with BAP and Kin shoots were initiated after 4 weeks of inoculation from HC of *J.curcas*. Similarly multiple shoots were formed along with callus induction when HC explants were cultured on MS medium having BAP (1.0 mg/L) and IBA (0.5 mg/L). Additives added to MS medium containing different concentrations of BAP and IBA inhibited the multiple shoot formation and promoted callus formation from shoot tip explants of field grown plants. Low concentrations of BAP (0.5 mg/L) and IBA (0.25 mg/L or 0.5 mg/L) were found to be the best for multiple shoot induction from shoot tip explants. Three centimeter increase in length was achieved on MS medium