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Investigation of the effect of explants and hormones on the callus growth and regeneration of radish (*Rapahnus sativus* L. Var. Beeralu)

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Radish (*Raphanus sativus* L.,Brassicaceae) is an important vegetable that is cultivated throughout Asia. This plant produces an edible root with different shapes and sizes. Apart from culinary purposes; radish has varied medicinal properties. Major genetic improvement of radish has been achieved by conventional plant breeding methods. However, these methods are time and labour consuming. To overcome such difficulties plant genetic engineering is used to obtain novel plants with useful agronomic characters. The success in plant genetic engineering is dependent on an efficient tissue culture system with a higher plant regeneration potential. This study was conducted to investigate the effects of different explants and hormones on the callus growth and regeneration of radish (*Raphanus sativus* L. variety Beeralu Rabu). Six different hormone combinations on MS basal medium with 0.1 mg/l 1–naphthaleneacetic acid (NAA) + 0.1, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0 mg/l 2 4-dinitrophenylhydrazine (2, 4–D) as well as three explant types: hypocotyl, leaves and root were employed. Complete Randomized Design (CRD) with five replicates was used for the study. After one month the callogenesis and diameter of fresh callus were recorded. The calli from selected explant was cultured to regenerate with 0.1 mg/l NAA and 1.0, 1.5, 2.0, 2.5, 3.0 mg/l benzyl adenine (BA). The results showed that, 0.1 mg/l NAA + 0.5 mg/l 2.4-D was the best medium for callus induction and hypocotyl explant was the best explant in respect of the callogenesis and also, it had 4 callus with the highest diameter (> 2 cm).These results are indicative of the presence of high internal hormonal concentration of the plants and probably it's inhibiting effects on callus production of the explants in high level hormone enriched media. The medium supplemented with 0.1 mg/l NAA and 2.5 mg/l BA was the best hormonal combination for the *in vitro* regeneration (6.6 shoots / explants) of the radish variety Beeralu from callus.

Keywords: *Raphanus sativus* L., callogenesis, regeneration, explants, MS basal medium, hormones, naphthaleneacetic acid, 2 4-dinitrophenylhydrazine, benzyl adenine

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