EFFECT OF COCONUT WATER AS A NATURAL GROWTH ENHANCER ON THE SHOOT MULTIPLICATION OF IN-VITRO PROPAGATION OF TURMERIC

(*Curcuma domestica*)

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ABSTRACT

Cell, tissue, and organ growth and multiplication on specific solid or liquid media in a sterile and controlled setting are known as plant tissue culture. For the preparation of the media used in tissue culture methods, a variety of expensive chemicals are used. Researchers have found that coconut water is also used as a natural hormone or supplement to improve the regeneration of plant cells, to enhance callus induction, shoot development and multiplication. Young coconut nuts (about 6 months old) will be used to collect coconut water obtained from in Divulapitiya area. MS control media (T_0) was prepared by adding macronutrients, micronutrients, MS Miner, Vitamins, 0.1g/*l* Inositol, 30g/*l* Sugar, 7g/*l* Agar, 2ml BAP and 0.2ml NAA to the MS solution. Other treatment media were prepared by adding 50 ml (T_1), 150 ml (T_2), 250 ml (T_3) and 350 ml (T_4) of the coconut water to the MS media solution. The pH of the media was set to 5.6. Turmeric (*Curcuma domestica*) plant was selected for this experimental as an experiment plant. Good quality sub-cultured plants (plant size 3cm and disease free) selected from the 8th sub-cultured cycle and established in prepared treatments. The shoot multiplication of turmeric plants was observed at one week intervals by measuring the first shoot appearance date, the number of new shoots, the new shoot height and the number of leaves per plant. The data were analyzed using SAS in which one -way ANOVA was performed at a significance level of (p<0.05) at a 95% confidence limit. In this experiment, the shoot multiplication is higher in the medium made by using coconut water than in the normal MS medium, because of the presence of hormones in coconut water which are necessary for plant growth. The results showed that the mean of emerged shoot number at 5% CW concentration was significantly higher than the control and all the other treatments (F= 5.09; df=4,45; P<0.05). The highest mean shoot height was recorded from the untreated control as 1.97 cm and there was no significant difference was observed between the untreated control. The highest leaf number of 2 was recorded with the untreated control and 35% CW treatment, while the lowest was recorded as 1 with 5%, 15% and 25% CW concentration treatments.

Keywords: Plant tissue culture, Coconut water, Turmeric, Shoot multiplication.

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