Development of a sterilization protocol for *in-vitro* regeneration of Turmeric (*Curcuma longa*)

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Abstract

Turmeric are commercially cultivated by vegetative propagation method as it has a very rare flowering ability. Even though, vegetative propagation through rhizome is done their multiplication rate is very low and also there is a high contamination rate of propagating materials. The use of in vitro culture techniques for large scale propagation of turmeric is a current trend. Therefore, the study was focused on developing a proper explant sterilization protocol which is a major pre-requisite for a successful in vitro culture. The experiment was laid out in a two-factor factorial complete randomized design (CRD). The data were analyzed using analysis of variance (ANOVA) and SAS statistical package (Version 9.1). Sprouting rhizomes of turmeric were cleaned and washed with a soap solution for 10 minutes and washed with distilled water. Then treated with a 0.4% (w/v) Carbendazim (fungicide) solution for 10 minutes and treated with 70% ethanol for 1 minute. Buds were then treated with 10%, 20%, 30% and 40% commercially available Clorox for 5, 10, 15 and 20 minutes. For each treatment 10 buds were used, where 3 replicates were performed for each treatment. They were introduced to MS (Murashige and Skoog) medium to observe the growth and contamination. Data were collected after 4 and 6 weeks of culture. The results showed the significantly highest survival rate (80%) of rhizome buds from the treatment 30% Clorox for 20 minutes and 40% Clorox for 15 or 20 minutes. Therefore, it can be recommended to use 30% Clorox for 20 minutes to ensure the provision of disease free viable buds for *in vitro* propagation of turmeric.

Keywords: *in vitro*, Propagation**,** Sterilization, Turmeric

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