OPTIMIZATION OF A PROTOCOL FOR MICRO-PROPAGATION OF *Aloe vera*

H.H.A.C.K. Jayawardhana[1], S.M. Nagahawaththa[2], and P.A. Weerasinghe[1]

[1]Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.
[2]Tissue Culture Division, Plant Virus Indexing Center, Department of Agriculture, Gabadawaththa, Homagama, Sri Lanka.

The medicinal plant *Aloe vera* naturally propagated through suckers is insufficient to meet the global demand. Rapid micro-propagation technique plays a vital role to overcome this problem. The present investigation was launched to maximize micro-propagation rate of *Aloe vera* by using different explant materials, optimizing surface sterilization and using different concentrations of growth regulators for induction and multiplication. Suitability of two types of explants materials (Type A- stem piece with one leaf and Type B- only the stem piece) were evaluated by the survival percentage. The explants were disinfected with different concentrations of Sodium hypochlorite (15%, 20%, 25%, and 30%) dipping in 10, 20 and 30 minutes. Further, explants were treated with 70% alcohol and three concentrations of Hydrogen peroxide (5%, 10%, and 15%) to reduce the contaminations. The contamination percentage and bleaching percentage were recorded to determine the most effective surface sterilization protocol.6-benzylaminopurine (BAP) concentrations of 2 mgL^{-1}, 3mgL^{-1}, and 4mgL^{-1} were selected as treatments with 30 replicates for each to assess the survival percentage, multiplication rate and the number of shoots per culture. The highest survival percentage (93.28%) was recorded in Type A explants. The explants sterilized with 25% Sodium hypochlorite for 20 minutes followed by 70% alcohol and 10% hydrogen peroxide were the best surface sterilization treatments that had the least contamination percentage of 2.22%. There was no significant difference ($p>0.05$) among the survival rate of three treatments of induction. Significant difference was recorded between 2 mgL^{-1} and 3 and 4 mgL^{-1} of BAP for average shoot number and multiplication rate. The highest average shoot number (15.85) were recorded in 3mgL^{-1} of BAP and the highest multiplication rate (3.0137) was recorded in 4mgL^{-1} of BAP. It could be concluded that the protocols developed in this study can be used for the micro-propagation of *Aloe vera*.

Keywords: *Aloe vera*, Micro-propagation, Sterilization, Induction, Multiplication