

Developing Surface Sterilisation Protocol and Multiplication Media for *Sansevieria trifasciata*

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Abstract

Sansevieria trifasciata is a common perennial plant native to West Africa and specifically found in Nigeria and Congo. It is commonly known as “Snake plant” and “Mother-in-law’s tongue”. *S. trifasciata* is a versatile and valuable plant with a wide distribution, distinctive morphology, and several practical benefits, including air purification and less maintenance, contributing to its popularity as an indoor and outdoor ornamental plant. It is a great challenge to produce planting materials through traditional propagation techniques due to the increased demand. Therefore, it will be vital to develop a cost-efficient protocol for *in vitro* propagation of *S. trifasciata*. At the first phase of surface sterilisation, the explants from fully expanded young leaves were treated with 70% (v/v) ethanol for 5 min following five different CloroxTM concentrations (10%, 15%, 20%, 25%, and 30%) separately, each for 20 minutes. Surface sterilisation of leaf explants could not be optimized in Phase I due to severe microbial contamination. Therefore, in Phase II surface sterilisation, leaf explants were treated with three different exposure times of 70% (v/v) ethanol and 30% CloroxTM for 30 minutes. Explants treated with 70% (v/v) ethanol for 20 min followed by 30% CloroxTM for 30 min showed optimised surface sterilisation, resulting in 100% explants survival, 2 weeks following incubation. Cultures were maintained in hormone-free media for two weeks at standard conditions to allow root and shoot elongation. Later, those were transferred to a media supplemented with different concentrations of BAP (1 mg/l, 2 mg/l, 3 mg/l) while maintaining the hormone-free media as the standard. After 10 weeks of incubation, media supplemented with 3 mg/l BAP showed a significantly higher mean number of shoots (4.35 ± 0.67) and mean length of shoots (1.38 ± 0.25 cm) compared to all other treatments. The study demonstrated that the treatment with 70% ethanol (20 min) and 30% CloroxTM (30 min) successfully sterilised the leaf explants of *S. trifasciata* and 3 mg/l of BAP markedly improved the multiplication and growth of shoots, highlighting the significance of developing an optimized surface sterilization and appropriate growth regulation for a successful *in vitro* propagation.

Keywords: Benzyl aminopurine, *In vitro* propagation, Multiplication, *Sansevieria trifasciata*, Surface sterilisation