

Evaluation of Suitable Local Nutrient Mixtures for Micro Propagation of Potato (*Solanum tuberosum*)

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Abstract

Micropropagation is widely used for potatoes (*Solanum tuberosum* L.) as a viable option for propagation. This research investigates alternative media for *in vitro* methods to propagate potatoes. Three treatments were investigated. The MS medium, serving as the control, was composed of 1 mg/l BAP (6-Benzylaminopurine), 0.1 mg/l NAA (Naphthalene acetic acid), 30 g/l sugar, 0.1 g/l Myo-inositol, and 1 g/l charcoal, while the other two treatments, Albert's solution and a novel media (Kodi mix, KM), were supplemented at the rates of 2 g/l to the above media. All three treatments were replicated five times, employing a completely randomized block design (CRD). Surface-sterilized potato shoots with one node were introduced into different types of media for regeneration. Growth and developmental data were collected at 3, 4, and 5 weeks of *in vitro* culture. Subsequently, sterilized sand and coir dust in a 1:1 ratio were utilized for plant acclimatization, and the health of the plants was assessed. Our results indicated that Albert's solution (28/plant) improved root development (number + length), while KM displayed the lowest numbers (13/plant). However, shoot length, number of roots, leaves, and internode showed significant differences among treatments in the MS treatment, while KM promoted marginally. Moreover, treatment with Albert's solution produced the highest number of healthy plants at 83.6%, followed by MS at 79.6%, and KM at 51.1%, respectively, at the post-acclimatization stage. Hence, we conclude that both Albert's and MS media promote the overall performance of potato tissue-cultured plantlets, while the novel Kodi mix medium promotes the shoot growth and development marginally and minimal root development in potato tissue-cultured plantlets.

Keywords: *Albert's solution, Cost -effective, Kodi mix fertilizer, Micropropagation, Murashige and Skoog (MS)*