Effect of cytokinin types, concentrations and their interactions on in vitro shoot regeneration of Chlorophytum borivilianum Sant. & Fernandez

ABSTRACT

Background: Chlorophytum borivilianum is a rare medicinal plant originally distributed throughout the forest of India. The tubers of C. borivilianum are used as an aphrodisiac and impotence supplement. The propagation of C. borivilianum is possible through seeds and tubers, but conventional methods may take several months. Hence in vitro technique of shoot regeneration could be an efficient alternative means of propagating the species. Latest study reported microtuberization of C. borivilianum but there is no sufficient study on a rapid method for shoot multiplication and elongation. Results: Young shoot buds of C. borivilianum were cultured on MS medium containing 6-benzylaminopurine (BAP) and Kinetin (Kn), both at 0, 8.88, 17.8 and 26.6 μM, either individually or in combinations. Proliferated shoots were subcultured on fresh medium of the same constituents on week 3 of culture for further shoot multiplication and elongation. BAP alone (8.88–26.6 μM) was significantly effective on shoot multiplication, while Kn alone (8.88–26.6 μM) was significantly effective on shoot elongation compared to the control containing MS basal medium without any plant growth regulator. However, combination of both cytokinins stimulated an interaction producing higher shoot number and shoot length compared to their individual application. Conclusions: The most suitable combination was 8.88 μM BAP + 8.88 μM Kn, reaching a mean shoot number of 10.83 and shoot length of 6.85 cm.

Keyword: Chlorophytum borivilianum; Cytokinin interaction; Shoot multiplication