A protocol was developed for the in vitro propagation of ginger (Zingiber officinale) cv. Suprava using dormant axillary buds from unsprouted rhizomes. The dormant axillary buds embedded in the rhizome nodes were induced to sprout when cultured on MS medium supplemented with 6-benzyladenine (BA) alone (1–6 mg/l) or with a combination of BA (1–6 mg/l) and indole-3-acetic acid (IAA) (0.5, 1 mg/l). In vitro sprouted buds were transferred to the multiplication medium containing various combinations of auxins and cytokinins. MS basal medium supplemented with BA (1 mg/l), IAA (1 mg/l) and adenine sulfate (100 mg/l) was found optimum for the in vitro multiplication of shoots producing (8.2 ± 0.2) shoots from a single explant within 30 days of culture. The multiplication rate remained unchanged in subsequent subcultures. Rooting of shoots occurred in the same multiplication media. Upon transfer of the in vitro culture to ex vitro in pots, 96% of plants survived and established successfully under natural conditions. Tissue culture-raised plantlets of ginger could be conserved in vitro through subculturing at an interval of 4 months. The genetic stability of micropropagated clones was evaluated at regular intervals of 6 months up to 24 months in culture using cytophotometric estimation of 4C nuclear DNA content and random amplified polymorphic DNA (RAPD) analysis. Cytophotometric analysis revealed a unimodal distribution of the DNA content with a peak corresponding to the 4C value (23.1 pg), and RAPD analysis revealed monomorphic bands showing the absence of polymorphism in all fifty regenerants analyzed, thus confirming the genetic uniformity among in vitro grown somaclones of Z. officinale. This study is of commercial significance as axillary bud explants are available throughout the year for initiating a fresh culture of the elite ginger cv. Suprava to be used as a source of true-to-type disease-free planting material thereby minimizing the adverse effect of repeated subculturing from the same explant source.

Key words: Zingiber officinale, Micropropagation, Genetic Stability