

High-frequency induction of multiple shoots and plant regeneration from cotyledonary node explants of Tongkat Ali (*Eurycoma Longifolia* Jack)

ABSTRACT

Eurycoma longifolia Jack is traditionally used as an aphrodisiac and health supplement for various diseases. Due to its potential commercial value as a plantation crop as well as to conserve its germplasm, it is necessary to establish a suitable protocol of propagation as a better alternative for mass production. Hence, this study describes an efficient and reproducible in vitro regeneration system of *E. longifolia*. Cotyledonary node explants were excised from 2-week-old in vitro seedlings and cultured on Murashige and Skoog (MS) medium supplemented with different concentrations of 6-benzyl aminopurine (BAP), kinetin (KIN) and thidiazuron (TDZ). In addition, various concentrations of indole-3-butyric acid (IBA) and α - naphthaleneacetic acid (NAA) were tested for in vitro rooting of shoots. From the results, it was observed that 1.0 mgL⁻¹ of BAP induced the highest percentage of shoot formation (76.7%) from cotyledonary node explants. The best rooting response was observed on half-strength MS medium containing 0.5 mgL⁻¹ IBA with an average of 3.2 roots per shoot. Regenerated plantlets were successfully acclimatized to ex vitro conditions with an 85% survival rate. Overall, this in vitro regeneration protocol provides a rapid technique that can be utilized for commercial propagation and genetic transformation of this medicinal plant.

Keyword: Seed germination; Shoot multiplication; In vitro rooting; Acclimatization; Cytokinin and auxins