Asymbiotic seed germination and seedling development of Vanda dearei

Abstract

The effects of basal media, complex additives, plant growth regulators and carbon sources on in vitro seed germination and seedling development of Vanda dearei are reported. Immature seeds from four months old capsule were used as plant materials. All cultures were grown under 24h light at 25±2ºC. Results showed that seeds cultured on Knudson C (KC) basal medium germinated after 25 days with 63.0±3.2% germination rate followed by half-strength Murashige & Skoog (½MS) (45.4±10.4%) and Vacin and Went (VW) (41.8±4.0%). Addition of 0.5% (w/v) yeast extract significantly enhanced (85.9±0.7%) seed germination and shortened germination time to 23 days. A NAA at 0.1mg/l had similar performance (80.2±20.5%), however, this treatment delayed seed germination and induced necrosis to protocorm development. Sucrose at 1% (w/v) also enhanced seed germination (98.3±2.3%), while glucose and fructose treatments showed moderate effects. For growth and development of protocorms, KC basal media recorded the highest percentage of protocorm with root (37.0±4.3%), mean number of leaf (4.50±1.00) and mean number of roots produced (2.0±0.6) with largest leaf area (3.7x2.3mm) and longest root length (11.7±8.4mm). Addition of 20% (v/v) coconut water significantly improved protocorm development and shoot growth.