

IN VITRO PROPAGATION OF POTATO

Dr. Md. Ekramul Hoque

Extended summary

An attempt was made to identify the best hormonal combination for the *in vitro* regeneration of potato (*Solanum tuberosum* L.) at the Department of Biotechnology, Sher-e-Bangla Agricultural University, Sher-e-Bangla Nagar, Dhaka-1207. The experimental materials are Diamont, Cardinal, Granulla, Altra, Dheera and Provinto. Collected tubers are treated with 50 ppm Gibberilic Acid for sprouting. The sprouts were used as explants for *in vitro* regeneration. Different concentration of IAA (0.5, 1.0, 1.5, 2.0 and 2.5 mg/L) and KIN (1.0, 1.5, 2.0 and 2.5 mg/L) were used as hormonal treatment. Among the different treatments, the concentration of 2.0 mg/L of IAA + KIN showed highest roots and shoots induction. It is interesting to note that, multiple shoot and root was induced in all the hormonal combination except in simple MS media. Maximum mean number of shoot (13.2) and the highest mean number roots 17.3 was obtained in Granulla variety with 2.0 mg/L IAA + 2.00 mg/L KIN hormonal combination. The variety Granulla showed best performance in respect of both roots and shoot formation. It was followed by Diamant and Cardinal varieties. Dheera and Provinto showed lower performance in all respect under studied. Rooted shoot of these three varieties were acclimated and successfully established into soil in natural condition.

Another set of experiment was conducted to study the sprouting ability and *in vitro* regeneration potentiality of potato under Gibberellic Acid₃ (GA₃) treatment. Three potato varieties *viz.* Diamant, Cardinal and Granulla were used as experimental materials. It revealed that, sprouting initiation time, sprout length and number was directly proportionate to the higher concentration of GA₃ application. Higher concentration (400 ppm) showed better performance for all the parameters under studied. Among the three varieties Granulla showed quick and more responsive to GA₃ application. MS medium supplemented with 1, 2, 3, 4 and 5 mg/L of GA₃ were employed for *in vitro* regeneration of these three cultivar. Among the treatment the combination MS + 4.0 mg/L of GA₃ showed best performance on multiple shooting and root induction in all the three varieties. The genotype Granulla was more potential to *in vitro* response as well as seedling establishment in natural condition among the three cultivars.