IN VITRO CALLUS INDUCTION AND PLANT REGENERATION PROTOCOL AND SOMACLONAL VARIATION ASSESSMENT IN POTATO (*Solanumt uberosum* L.)

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Somaclonal variation is used as a strategy for developing genetic variability in potato. These variations are obtained through callus tissues. The study was carried out with three potato (*Solanum tuberosum* L.) varieties to develop a protocol for *in vitro* callus induction and plant regeneration and to induce somaclonal variation through callus in potato. Inter-nodal cuttings of three potato cultivars were used as explants and cultured on Murashige and Skoog (MS) medium supplemented with different concentrations of 2, 4-D in combination with BAP, NAA and Kinetin. [2,4 - D (3.0 mg l^{-1}),2, 4-D (2.0 mg l^{-1}) + BAP (2.0 mg l^{-1}) and 2, 4-D (2.5 mg l^{-1}) + NAA (2.0 mg l^{-1}) + Kinetin (1.0 mg l^{-1})]. Callus diameter and callus formation percentage were recorded for four weeks. Highest callus (92.08%) was formed in 9 days and highest callus diameter was observed in MS medium supplemented with 2,4 -D alone at 3.0 mg l^{-1}. The callus induction potentiality was highest in the variety *Granola*, followed by *Desiree* and *Raja*. MS media supplemented with different levels of hormones, 0.2 mg l^{-1} BAP + 0.1 mg l^{-1} GA_3 + 0.01 mg l^{-1} NAA1.0 mg l^{-1} BAP + 0.1 mg l^{-1} GA_3 and0.2 mg l^{-1} KIN + 0.2 mg l^{-1} IAA were used for shoot regeneration. Shoot height and number of shoots per callus were recorded after four weeks. MS media containing 1.0 mg l^{-1} BAP + 0.1 mg l^{-1} GA_3 was the best for plant regeneration. Highest shoot height observed was 9.06 cm. The plant regeneration potential was highest in the variety *Desiree*, followed by *Granola* and *Raja*. Somaclonal variations were observed in all varieties though minimal.

Key words: Callus induction, Plant regeneration, Potato, Somaclonal variation