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Abstract
Ban-Lan-Gen（Isatis indigotica）,genus of Isatis in the family of Crucifera, and it is a biennial herb, other names is bei-ban-lan. The purpose of this study was to establish the tissue culture techniques for mass propagation of Isatis indigotica ,and followed with cell suspension culture to produce the secondary metabolites. The results are summarized as follows：

1.Seeds of Isatis indigotica were germinated on the medium containing 1/10 MS basal salts,1% sucrose and 0.7% agar（pH＝6.0）, after two weeks under dark, the optimum germination rate was 85　5%.2.The explants of root tips、hypocotyls and cotyledons of seedling were used for callus induction on the MS basal medium containing BA（0,0.5,1,2,3,5 mg/L）and 2,4-D（0,0.5,1,2,3,5 mg/L）.The results showed that 100　0% explants form callus after 30 days under dark on the MS basal medium containing 0.5 mg/L BA and 0.5 mg/L 2,4-D and 3% sucrose, and the cotyledons were the best explant than root tips and hypotyls for callus induction.3.The best basal salts medium for callus proliferation was MS medium, after 30 days under dark ,the fresh and dry weight of callus were better than on the 1/2MS、B5 and LS basal salts medium.4.The callus on the MS medium containing 3.0 mg/L TDZ、3% sucrose and 0.7%agar（pH＝6.0）,after 30 days under light, the shoots formation rate was 100　0%.5.The hypercotyls on the MS medium containing 1.0 mg/L BA、3% sucrose and 0.7%agar（pH＝6.0）can induce the mass adventitious shoots formation 5　3 shoots per explant. 6.Adventitious buds can be induced from hypocotyls when cultured on the MS medium containing 3.0 mg/L BA , 3% sucrose and 0.7%agar（pH＝6.0）medium containing, the regeneration rate was 21　3 buds per explant than root tips and cotyledon.7.Roots can be induced from hyperotyls when cultured on the MS medium containing 0.1 mg/L NAA, 3% sucrose and 0.7%agar（pH＝6.0）,the results were 8　2 roots per explant than other condition.8.We used gas-permeable surgical tape（Milipore 3M） for sealing tube in this test, it can reduce the relative humidity in the vessels, and no hyperhydricity shoots formation.
Advisory Committee Wu Chun-Ta - advisor

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