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S10-P-136 (12:00-13:00)

Effect of Media Components on Masspropagation of *Thelypteris palustris* and *Dryopteris nipponensis*

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To establish optimum media for the masspropagation of *Thelypteris palustris* and *Dryopteris nipponensis*, MS media with different strength and Hyponex media were used in this experiment. In both species, 2MS medium was excellent for the prothallus multiplication. T. palustris grew poorly on Hyponex medium while *D. nipponensis* grew well on Hyponex medium. Optimum nitrogen contents in the media was 120 mM for *T. palustris* and 15-30mM for *D. nipponensis*. Dying of prothallus above those levels was observed in *D. nipponensis*. Sucrose contents of 4% was effective for prothallus growth in T. palustris while 1% was effective in *D. nipponensis*. Nutritional requirement was high in T. palustris, but high mineral concentration in *D. nipponensis* resulted in dying of prothallus. T. palustris required no agar, but *D. nipponensis* required 0.8% agar for active growth. In *D. nipponensis*, solid culture was best, followed by stationary liquid and shaking liquid culture. Growth was favorable when chopped prothallia were used as inoculation material in both species. The prothallus initiated from in vitro culture were transplanted to horticultural composts, and active formation of sporophytes was obtained within 150 days.
Key words: culture method, gametophyte, masspropagation, medium composition, sporophyte
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S10-P-137 (12:00-13:00)

Effect of Media Components and Soil Composts on Masspropagation of Three Species of *Pyrrosia* by Tissue Culture

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Present studies were conducted to establish masspropagation methods for 3 species in the genus *Pyrrosia*. Excellent growth of *P. lingua* was obtained on MS media containing 120mM of nitrogen source, 3% sucrose and 1% agar. In *P. hastata*, it was obtained on MS media containing 60 mM nitrogen source, 2% sucrose and 0.8% agar. Low nitrogen of 15 mM resulted in dying of prothallus. Shaking liquid culture did not enhance the culture efficiency of solid culture in above 2 species. In *P. linearifolia*, prothallus production was the highest on 2MS media containing 3% sucrose and 0.8% agar. The addition of growth regulators to culture media was effective in prothallus growth; especially kinetin 2 μM in *P. lingua* and 2ip 10 μM in *P. hastata*. In *P. hastata*, the addition resulted in callus formation except in NAA. In *P. linearifolia*, the addition of growth regulators reduced the prothallus growth, compared to control. Inoculation of prothallus after chopping promoted growth in all 3 species. Prothallus of *P. lingua* were planted on 12 kinds of soil mixes and soils mixed with compost or cocopeat were good for formation of sporophytes and roots. Especially, horticultural compost was very effective in the formation of sporophytes and roots. In *P. hastata*, soil mix of cocopeat and vermiculite with 2:1 ratio was good, while in *P. linearifolia*, horticultural compost was excellent for sporophyte formation.
Key words: gametophyte, masspropagation, medium component, soil mixed, sporophyte
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S10-P-138 (12:00-13:00)

Effect of Media Components on In Vitro Propagation of *Darlingtonia californica* and *Heliamphora minor*

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Present studies were undertaken to examine the effects of different composition of in vitro culture media on masspropagation of Darlingtonia californica and Heliamphora minor. Basic media was 1/2MS medium with 3% sucrose, 0.7% agar and pH 5.5. Shoot development and growth of young plants of D. californica was promoted with addition of 2 mg · L^{-1} BA only, but in H. minor with addition of 1 mg · L^{-1} BA and 2 mg · L^{-1} NAA. However, culture with leaf segments were unsuccessful opment obtained with 1/2MS and MS in D. californica and MS in H. minor. No agar addition was effective for shoot formation in D. californica and 0.6% in H. minor. The addition of charcoal to the media did not affect shoot formation. The growth of D. californica was excellent with 3% sucrose and shoot formation was promoted with 1-2% sucrose in H. minor. The growth of D. californica was not affected by the amount of total nitrogen, but in H. minor 1/2-1/4MS concentration was effective in shoot formation. Excellent plant multiplication was obtained with addition of NH_4Cl and KNO_3 at the ratio of 10:20 mM in D. californica and 15:15 mM in H. minor.
Key words: carnivorous plants, culture media, masspropagation, medium component
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S10-P-139 (12:00-13:00)

Several Factors Affecting In Vitro Culture and in Vivo Plant Growth of *Sarracenia purpurea*

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Present studies were carried but to establish masspropagation method for carnivorous plant, Sarracenia purpurea and also to investigate factors affecting growth of plants when transplanted out of culture vessels. Basic media was 1/2MS medium with 3% sucrose, 0.6% agar and pH 5.5. Various combination of NAA and kinetin were employed and best shoot multiplication was obtained with 1 mg·L^{-1} of NAA and kinetin. Agar content of 5% was optimum for the growth. Use of 200 mg·L^{-1} ascorbic acid singly or in combination with 100 mg·L^{-1} citric acid resulted in best shoot multiplication. No effects of changing pH level and of light or dark treatments were observed in this study. Different kinds of media such as 1/4MS, 1/2MS, MS and modified Parliman medium with different agar content were employed and modified Parliman media proved to be best for the shoot multiplication. Liquid media was superior to solid media in multiplication. Consequently, modified liquid Parliman medium was the best medium for shoot multiplication. The effects of soil mix, shading, irrigation, and liquid fertilizers on the plant growth out of culture vessels were studied, and the best growth was obtained with peatmoss and vermiculite (2:1) mixes. The optimum shading rate was 30%. Spraying water once, or twice a day and subsurface irrigation was ideal for growth of S. purpurea.
Key words: carnivorous plants, micropropagation, shoot multiplication, plant growth
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S10-P-140 (12:00-13:00)

In Vitro Tuberization of Potato in Response to ABA, Cytokinins and p-Coumaric Acid

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In previous experiments we found that in vitro tuberization of potato could be induced by ABA on agar solidified medium and under a continuous 8 hour photoperiod. In this work we wanted to test the effect of ABA + cytokinins and the effect of p-coumaric acid alone. Nodal segments of in vitro grown plantlets of "Alpha" variety were established (10 nodes/ "Gerber" flask) on MS medium (30 ml) containing 30 g/L sucrose and 8 g/L agar, and incubated with a temperature of 25/18 °C (day/night) and a photoperiod of 16 hours, for 30 days. After this period, we added to each flask 5 ml of MS liquid medium containing 90 g/L sucrose with ABA (0.2 mg/L) + 0, 0.1, 0.2, 0.4, 0.8, or 1.6 mg/L Kinetin or Benzyladenine (BA); or with 0, 0.1, 0.2, 0.4, 0.8, or 1.6 mg/L p-coumaric acid alone; incubating the plantlets under a temperature of 19 °C, and a photoperiod of 8 hours, for 110 days. There were 5 flasks (replicates) per treatment. We found in these experiments, as in the previous one, that as the number of microtubers per flasks increased, their diameter and weight decreased, and therefore, compared to each separate control, Kinetin tended to increase slightly the number of microtubers per flask, BA presented a more pronounced effect, while p-coumaric acid induced a good microtuber formation, especially with 0.4 mg/L, where we obtained 12 microtubers per flask, with a reasonable diameter and weight.
Key words: abscisic acid, cytokinins, microtubers, potato, p-coumaric acid
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