Growth rate and polyphenol production in transformed root cultures of Fragaria x ananassa in phytohormone-free BF liquid medium.

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Abstract

Agrobacterium-mediated genetic transformation of two new Fragaria x ananassa (Rosaceae) cultivars, "Kurume 52" and "Hinomine", was accomplished by infection with two A13 strains of A. rhizogenes. BF medium, a modified Murashige-Skoog medium, was used in the current studies. The growth and polyphenol (procyanidins and flavonoid) productivity of the root cultures in phytohormone-free BF medium were determined. At 6 weeks, the newly-cloned "Kurume 52" and "Hinomine" cultures showed maximum growth (210 mg and 20 mg per flask, wet and dry weights respectively). The hairy roots of "Nyoho" and "Toyonoka" also showed maximum growth rate (640 mg and 450 mg per flask, respectively) at 8 weeks. The content of(+)-catechin (1) in "Nyoho" (0.54 % of dry weight) was highest among the five clones at 8 weeks. In addition, procyanidin B-6 (4) was detected only in "Toyonoka" cultures.