

***Genista tinctoria* Hairy Root Cultures for Selective Production of Isoliquiritigenin**

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Hairy root cultures were established after inoculation of *Genista tinctoria in vitro* shoots with *Agrobacterium rhizogenes*, strain ATCC 15834. In transformed roots of *G. tinctoria* grown in Schenk-Hildebrandt medium without growth regulators the biosynthesis of isoflavones, derivatives of genistein and daidzein, and flavones, derivatives of luteolin and apigenin, characteristic for the intact plant, was completely inhibited. The only compound synthesized in *G. tinctoria* hairy roots was isoliquiritigenin (2.3 g/100 g DW), a daidzein precursor absent in the intact plant. This compound was stored entirely within cells and it was not until abscisic acid was added (37.8 μM supplement on day 42) that approx. 80% of it was released into the experimental medium. The paper discusses the effect of abscisic acid on the growth of *G. tinctoria* hairy root cultures, the biosynthesis of isoliquiritigenin and the way it is stored. A prototype basket-bubble bioreactor was designed and built to upgrade the scale of the *G. tinctoria* hairy root cultures. With immobilized roots and a new aeration system, large amounts of biomass were obtained (FW_{max} 914.5 g l⁻¹) which produced high contents of isoliquiritigenin (2.9 g/100 g DW). The abscisic acid-induced release of the metabolite from the tissue into the growth medium greatly facilitated subsequent extraction and purification of isoliquiritigenin.

Key words: Abscisic Acid, Basket-bubble Bioreactor, Isoliquiritigenin