

Chapter 26

Somatic embryogenesis of *Gentiana* genus IV.: Characterisation of *Gentiana cruciata* and *Gentiana tibetica* embryogenic cell suspensions

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Abstract: Experiments to characterise long-term embryogenic suspension cultures of *Gentiana cruciata* (L.) and *G. tibetica* (King) are reported. Cell suspensions of both species differed in the percentage of five selected fractions of cell aggregates, as well as in fresh and dry mass during three years of culture. In *G. tibetica* the ratio of cells in phase G₂ to G₁ was higher than in *G. cruciata*. The response of suspension cultures to GA₃ (at 0, 1.49 or 2.89 μmol), kinetin (at 0, 2.32, 4.64 or 9.28 μmol) and adenine sulphate (at 0 or 434 μmol) was studied. The increase of kinetin concentration stimulated embryo production in suspensions of *G. tibetica*. Somatic embryo production in *G. tibetica* was significantly higher than in *G. cruciata*. In *G. tibetica*, the aggregate fraction >450 μm was at least four times more productive than the same fraction in *G. cruciata* suspensions.

Key words: cell aggregate, flow cytometry, gentian, long-term suspension culture, plant growth regulators, somatic embryo

Abbreviations: AS - adenine sulphate; BAP - benzylaminopurine; Dic - dicamba; DW - dry weight; ECM - embryo conversion medium; FW - fresh weight; GA₃ - gibberellic acid; G₁ and G₂ phases of cell cycle; IM - initiation medium; KIN - kinetin; MM - maintaining medium MS - Murashige and Skoog medium; NAA - naphthaleneacetic acid; PEM - proembryogenic mass; PGR - plant growth regulator; TDZ - thidiazuron