SUCROSE INDUCES ARABINOGALACTAN PROTEIN SECRETION BY *BETA VULGARIS* L. CELL SUSPENSION CULTURES.

ABSTRACT

The aim of this study was to determine if the increase of the initial sucrose concentration (ISC) improves cell growth and arabinogalactan protein (AGP) secretion of Beta vulgaris L. cultures. ISC tested were 43.8, 87.6 and 131.4 mM. Cell growth and specific growth rate were improved increasing the ISC. Cell cultures grown with ISC 43.8 mM were fed with sucrose, and cellular growth was enhanced twofold, revealing the stimulatory effect of sucrose on cell growth. The AGP secretion was stimulated, increasing the ISC. This event was partially associated with the exponential growth phase of the culture. AGP precipitation with Yariy reagent of cell cultures inhibited cell growth without changes in viability. The assay of sucrose feeding confirmed the relationship between cell growth and AGP secretion. These observations suggest that AGPs may be required for cell division. The increase of AGP secretion by ISC coincided with a higher cellular aggregation, suggesting a possible role of AGP as cellular adhesion molecules. To determine whether AGP secretion is also stimulated by an osmotic effect, mannitol was fed to raise the osmotic potential from 23.78 to 95.97 mOsm kg⁻¹. Mannitol was not used for cell growth, but AGP secretion was stimulated sixfold in relation to the control. These results are important for understanding the possible factors involved in the AGP secretion of plant cell culture and that may be considered to improve the AGP production.

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Autores: Jacqueline Capataz-Tafur, Arianna M. Hernández-Sánchez, Mario Rodríguez-Monroy, Gabriela Trejo-Tapia, Gabriela Sepúlveda-Jiménez*.

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