

18th Biotechnology Congress

October 19-20, 2017 | New York, USA

Effect of elicitors on the antioxidant activity of different plant cell cultures

Lorena Almagro, Carlos Cerón, Ana Belén Sabater-Jara, Begoña Miras-Moreno, Pedro Joaquín Sánchez-Pujante, María Borja-Martínez, María Isabel González-Sánchez, Edelmira Valero-Ruiz, María Angeles Pedreño
Universidad de Murcia, Spain

Statement of the Problem: Grapevine is a good source of antioxidant compounds like phenolic compounds which are important in human nutrition. Likewise, broccoli contains a wide range of nutrients, dietary fibre, and phytochemicals with health-related properties. On the other hand, safflower is a medicinal plant, which has red and yellow pigments that can be used as food colorants or in the cosmetic industry. Safflower also produces bioactive compounds such as tocopherols and carthamin. Due to the high value of these compounds, new strategies have been used in order to increase their production since their extraction from raw plant materials is often tedious, expensive and the extracts are often heterogeneous. In this way, we have developed a method of production of antioxidant compounds based on the elicitation of plant cell cultures with β -cyclodextrins (CD) separately or in combination with other elicitors such as methyl jasmonate, coronatine, NaCl, β -glucan and hexenol.

Methodology: We have evaluated the effect of CD, methyl jasmonate, coronatine, NaCl, glucan and hexenol on the antioxidant activity in extracellular medium of grapevine, broccoli and safflower cell cultures for 144 h of incubation.

Findings: In this work, we have observed that the highest levels of antioxidant activity were found in safflower cell cultures elicited with β -glucan, β -glucan+CD or hexenol+CD. In addition, we also detected high levels of antioxidant activity in grapevine cell cultures treated with CD and methyl jasmonate while no significant differences were observed in any of the treatments performed in broccoli cell cultures compared to control cells.

Conclusion: Grapevine and safflower cell cultures elicited were able to produce high levels of antioxidant compounds, and therefore, these elicited plant cell cultures can provide an alternative system, which is at the same time, a more sustainable, economical and ecological system for their production.

Biography

Lorena Almagro has completed her PhD from Murcia University and her Post-doctoral studies at the Institute of Molecular and Cell Biology in Porto (Portugal). In 2014, she had a Post-doctoral position in the University of Murcia. She has received her first award for Applied Research in a private Company by CEEIM (2009) and European Doctorate Awards (2013). She has published 25 papers in reputed journals and her work has been focused on the production and identification of bioactive compounds derived from different plant cell cultures under elicitation.

lorena.almagro@um.es

Notes: