POTENTIAL PHARMACOLOGICAL BIOACTIVE COMPOUNDS FROM ELICITATED STRAWBERRY IN VITRO CULTURES

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The growth of *in vitro* plants under controlled conditions allows obtaining useful and continue quantities of secondary metabolites. The aim of our study is to optimize the production of phenolics from *in vitro* cultures of plant cells or tissues, using the technique of micropropagation, and to evaluate the anticancer effects of these substances. The standardization of protocols for plant growing *in vitro* (cell suspensions, callus cultures and seedlings) is made by modulating the physical and chemical *in vitro* culture conditions (quality of light and or plant growth regulators) of vegetative tissues. Strawberry contains phenolic compounds that have antioxidant and anticancer properties. The first experimental phase included the induction of callus formation from leaf explants of *in vitro* growing shoots of strawberry (*Fragaria x ananassa* Duch, cv Don.), from the germoplasm collection of the CRA-Centro di Ricerca per la Frutticoltura di Roma, inoculated on medium containing appropriate nutrients and growth regulator concentrations. After a growth period of 30 days, calli were transferred to liquid medium for obtaining cell suspension cultures. Cell suspensions were treated by changing spectra light: blue (400-600 nm, maximum at 450 nm), red (675 nm) and standard light. Photoperiod was of 16 hours; the treatments lasted 8 days. The second experimental phase involved optimization of phenolics extraction and partial purification from cell suspension cultures. In the third phase normal (fibroblast) and transformed cell lines (Caco-2 and Ht-29) were treated with different amounts of extracts with the aim of evaluating the anticancer effect of these substances in term of antiproliferative effects. When normal fibroblasts were exposed to the phenolics from strawberry cell suspensions obtained under growth with the three lights (4,5 ug/ml, HPLC quantitation) no differences in cell number were obtained. By contrast, when applied to transformed cells the three lights provoked different responses, the red light being the most powerful in inducing an antiproliferative effect. Our preliminary results, concerning the antiproliferative activity of extracts on Caco-2 and Ht-29 cells, underline the potential of these berry cultures for the production of pharmacological bioactive compounds. Since changes of biological activity of phenolics extracted from such elicited plant cells may be due to variations in their composition, works are in progress to characterise single compounds of the extracts produced by cell suspension cultivated with red and blue light as elicitors.