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with *tert*-butyl hydroperoxide (*tert*-BOOH). In conclusion, the induction of antioxidant defenses in human skin fibroblasts by CA and CS may be applied for nutritional applications toward cytoprotective and anti-aging interventions.

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PS3: 43

Induction of antioxidant defenses in human HepG2 cells by a methanolic extract of *Hypericum perforatum* cells elicited *with Agrobacterium tumefaciens*

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Hypericum perforatum (HP) commonly known as St. John's wort is an important medicinal plant traditionally used in several ailments including mild to moderate depression. In a recent study, elicitation of HP cells (culture of cells in suspension) with *Agrobacterium tumefaciens* (AT) increased significantly the production of compounds with antioxidant and antimicrobial properties [1]. The present investigation has been conducted to test the efficacy of methanolic extracts of elicited and control HP cells in protecting human hepatocytes (HepG2 cell line) upon oxidative stress. Briefly, HepG2 cells were treated with *tert*-butyl hydroperoxide (*tert*-BOOH) to induce oxidative stress, and the ability of the HP extracts to protect against cell death were measured by MTT and LDH leakage assays. The ability of these extracts to induce cellular antioxidant defenses were investigated by western blot and biochemical determinations. When HepG2 cells were co-incubated with 800 µM *tert*-BOOH and HP extracts (80 µg/ml), only the extract from the elicited HP cells was able to significantly prevent *tert*-BOOH-induced cell death. The extract from control HP cells did not show any protective effect, on the contrary, stimulated *tert*-BOOH toxicity. When HepG2 cells were pre-incubated for 5 h with HP extracts, followed by a period of 16 h of recovery with fresh medium, prior to incubation with *tert*-BOOH, only the HP extract from elicited cells significantly protected against cell death. This suggested the ability of HP extract from elicited cells to induce intracellular antioxidant defenses in HepG2 cells. That was confirmed by the induction of about 40% in the content of glutathione in HepG2 cells, whereas control extract increased only 10%. As well, only the extract from elicited HP cells were able to induce the levels of cytoprotective enzymes such as HO-1 and NQO1. In conclusion, we observed that elicitation of HP cells with AT produced bioactive compounds present in the methanolic extract able to protect HepG2 cells against oxidative stress, and also to induce intracellular antioxidant defenses of this human cell line.

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PS3: 44

Effect of algae and plant lectins against bacterial biofilm formation

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Biofilms are composed by microbial cells that are irreversibly associated with a surface and are enclosed in a matrix of polymeric material. The search for potential phytochemicals as anti-biofilm agents has become an active area of research. Lectins are sugar binding proteins of non immune origin that agglutinate cells and/or precipitate glycoconjugate molecules. Due to their capacity to bind and recognize specific carbohydrates, lectins can be a potent tool against biofilms. Thus, this work aims to evaluate, *in vitro*, the activity of a set of plant and red algae lectins against clinical relevant bacteria, *Staphylococcus aureus* and *Klebsiella oxytoca*, by the assessment of their capacity to interfere on biofilm formation. Lectins were added to bacteria (2 x 10^6 CFU/mL) on the moment of biofilm formation in concentrations ranging from 25 to 250 µg/mL. Subsequently, the resultant biofilms (48 h) were analyzed in terms of biomass by crystal violet staining and in terms of cell viability by assessing the number of colony forming units. Additionally, the effect of lectins on planktonic growth was also assessed following the optical density of the bacterial cultures along time. Although both groups of lectins were able to reduce the growth of *S. aureus* and *K. oxytoca*, the plant lectins from *Vatairea macrocarpa* (VML) and *Cratylia floribunda* (CFL) showed the better activities. It should be highlighted that VML at 250 µg/mL reduced around 90% the planktonic growth