CHITOSAN AFFECTS ENDOPLASMIC RETICULUM AND ACTIN CYTOSKELETON OF *Acer pseudoplatanus* L. CULTURED CELLS

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In spite of their role in sensing local stress and in controlling fundamental processes including programmed cell death (PCD), the responses of cellular structures and organelles to various stress conditions are poorly investigated in plants. In sycamore (*Acer pseudoplatanus* L.) cultured cells different PCD inducers affect the mitochondrial morphology, the architecture of endoplasmic reticulum (ER) and the actin cytoskeleton (Contran *et al*., 2007; Malerba *et al*., 2004; 2008). These findings make sycamore cultured cells an useful experimental system to investigate the role of cell structures and organelles in stress responses.

Chitosan (CHT) is a natural, non-toxic and inexpensive compound obtained by partial alkaline deacetylation of chitin, the main component of the exoskeleton of crustaceans and other arthropods. The unique physiological and biological properties of CHT make this polymer useful for a wide range of industries such as cosmetology, food, biotechnology, pharmacology and medicine, and agriculture (Kurita, 2006). Although the exact mode of action of CHT is still unknown, in agriculture it has been shown to be a versatile compound that controls numerous pre and postharvest diseases on various horticultural commodities (for a review see Bautista-Baños *et al*., 2006). In sycamore CHT rapidly induces a set of defence/stress responses that include accumulation of dead cells and of cells with fragmented DNA, production of H_2O_2 and nitric oxide (Malerba *et al*., 2011). In this work we investigated the effects of CHT on ER architecture and actin cytoskeleton dynamics of sycamore cultured cells. The results show that CHT affects ER architecture with a concomitant accumulation of the HSP70 ER-resident molecular chaperone Binding Protein (BiP) and induces fragmentation of actin filaments accompanied by a decrease in the protein level only at the highest CHT concentration tested and at the last experimental time.

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