1465 Role of the enzyme, phytase, in the intracellular Ca(II) mobilization in plants

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1466 PHYTYLATION - A CHLOROPLASTIC VERSION OF PROTEIN PRENYLATION

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In vivo studies employing [^{3}H]mevalonate have revealed the presence of prenylated proteins in plants. A broad range of proteins, of molecular masses between 6-200 kDa, were shown to be prenylated. The labelling pattern of prenylated proteins in plants differed markedly from that observed both in mammalian and plant cells in tissue culture, where the majority of the prenylated proteins are confined to the 21-26 kDa molecular mass region. Chloroplastic prenylated proteins in large, accounted for the observed differences. The prenylated proteins in chloroplasts were found to be exclusively membrane associated and their prenylation was dependent on gene-products of the chloroplast genome as demonstrated by the use of protein synthesis inhibitors. Considering the versatility of the mevalonate pathway in plants compared to other organisms one should regard that plants may well possess isoprenoid modifying groups other than farnesyl and geranylgeranyl. In support of this possibility, phytol was released upon alkaline hydrolysis of extensively lipid-extracted plant proteins and its identity was confirmed by mass spectrometry analysis. The phytol could readily be derived from all-*trans*-[^{3}H]farnesol but not from all-*trans*-[^{3}H]geranylgeraniol. Both of these isoprenols could however be metabolised in a way that resluted in the *in vivo* incorporation of radiolabel into proteins, i. e. protein prenylation. Taken together, the data presented provide clear evidence for an until now undiscovered type of protein prenylation that is dependent upon products of the chloroplast genome.

1467 Interaction of a sunflower antifungal LTP with model membranes

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An antifungal protein from *Helianthus annuus* L. seeds (Ha-AP10) homologous to plant lipid transfer proteins (LTPs) has been purified to homogeneity and characterised. Two lines of evidence support a role of Ha-AP10 in sunflower resistance against fungal pathogens. First, western blot analyses indicate that it has an extracellular location. Second, antifungal tests have demonstrated that it produces a 50 % growth inhibition of the fungal pathogen *Fusarium solani* at 0.65 μM, placing Ha-AP10 among the most potent antifungal LTPs described so far.
The ability of Ha-AP10 to inhibit fungal growth is reverted by phospholipids, suggesting that this LTP interacts with fungal membranes to exert its activity. Hence, we have analysed by infrared spectroscopy the relationship between its antifungal activity and the secondary structure of Ha-AP10, showing that negatively charged phospholipids change its conformational state increasing the β-sheet content. These results suggest that the mechanism of inhibition of fungal growth by Ha-AP10 is mediated by its interaction with membrane phospholipids.

1468 Possible involvement of an acidic chitinase during direct somatic embryogenesis in Coffea arabica L.

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