

E224 Peroxidase Level and Morphological Changes in Relation to SO₂-Stress in *Pelargonium*

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Pelargonium seedlings grown on various concentrations of Na₂SO₃ at pH 5, 7 and 9 were examined to analyze peroxidase level and morphological changes in relation to SO₂-stress. The maximum growth inhibition of the seedling occurred in the presence of 8 µg/l Na₂SO₃ at pH 5, 400 µg/l at pH 7 and 1000 µg/l at pH 9. Great morphological changes such as 6 fold decreases of root length and 3 fold increases of lateral root numbers were found with 400 µg/l of Na₂SO₃ at pH 7, whereas the activity of peroxidase increased slightly. When 8 µg/l of Na₂SO₃ (pH 5) was treated, remarkable morphological changes did not occur. Instead about 8 fold increases of total peroxidase level, due to the increases of far migrating cathodic isoperoxidase and one anionic isoperoxidase, could be found in the root. Some morphological changes have occurred with 1000 µg/l Na₂SO₃ at pH 9. However, notable relationships between peroxidase level and morphological changes could not be found. Therefore, there might be different defense systems against SO₂-stress depending upon the pHs used, and the increase of peroxidase level and isozyme pattern changes correlated with the morphological changes could be taken as useful markers of SO₂-stress.

E225 Characteristics of Cathodic Isoperoxidase from *Pelargonium* Callus

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Pelargonium (*Pelargonium graveolens*) callus was induced from terminal buds of the mature plant on the media containing 2.0 mg/l NAA / 0.5 mg/l BAP or 2.0 mg/l 2,4-D / 0.5 mg/l BAP. There existed three cathodic isoperoxidases, named C1, C2 and C3 and four anodic isoperoxidases, named A1, A2, A3 and A4 in the callus. The expression patterns of cathodic isoperoxidases were different depending upon the combination of hormones applied. Representative isoperoxidase with the same electrophoretic mobilities in the callus culture and mature plant was C3 as judged by starch gel electrophoresis. Therefore, we isolated isoperoxidase C3 to homogeneity using CM-cellulose ion-exchange chromatography and Sephacryl S-200 gel filtration. The size of C3 estimated by SDS-PAGE was determined to be 58 kDa. The physico-chemical properties and catalytic abilities such as optimal pHs and Km values for various substrates will be shown in this report.