

## EFFECTS OF SOME SEIRIDIUM TOXINS ON THREE CYPRESS SPECIES

I. ABBATANTUONO and L. SPARAPANO

Dipartimento di Patologia Vegetale, Università di Bari.

The present study was aimed to observe the effects of some phytotoxic metabolites produced by *Seiridium cardinale*, a strain of *S. cupressi* and *S. unicorne* on three species of *Cupressus*.

Solutions of seiridin, *iso*-seiridin, a mixture of seiridin and *iso*-seiridin or cyclopaldic acid were injected by means of 2 ml syringes into the stem of 2-3 year-old potted trees of *Cupressus macrocarpa*, *C. sempervirens* and *C. arizonica* in a greenhouse. The toxin solutions were completely absorbed within 4 months.

Besides growth abnormalities, toxicity symptoms appeared on stem, twigs and leaves of the treated trees during nine months after treatment. Yellowing or reddening was first shown by the foliage close to the point of injection and later by the upper parts of the point. On *C. macrocarpa* these symptoms appeared sooner (2 months) and were followed by withering and die-back which progressively spread toward the lower parts of the plants. Eventually the whole plants died.

*C. sempervirens* and *C. arizonica* showed a similar sensitivity to the toxins, but *C. arizonica* was slightly more tolerant.

The effects of *Seiridium* toxins on the treated cypress trees closely resembled the symptoms produced by natural or artificial infections of *S. cardinale* or *S. cupressi* on their hosts.

## A POSSIBLE EFFECT OF FC ON THE PERMEABILITY OF THE PLASMALEMMA TO WATER

A. ABRUZZESE, C. ALISI, S. MORGUTTI and S.M. COCCUCCI

Istituto di Chimica Agraria, Università di Milano.

FC accelerates growth during the early phases of germination of radish (*Raphanus sativus* L.) seeds. The higher rate of growth during the first 42h of incubation in the presence of FC is linked to a faster increase in solute and water potentials of the seeds, and to a decrease in pressure potentials, probably due to a stronger acidification of the incubation medium with plasticization of the cell walls. The first 42h of incubation in the presence or absence of FC are thus characterized by different cell turgor status and different ability to absorb water from the external medium. We have studied whether this situation may or may not have an effect on the characteristics of permeability of the plasmalemma to water. Permeability has

been evaluated as time course (during the first 60") of water efflux from seeds previously loaded for 1h with  $^3\text{H}_2\text{O}$ , and by plotting the expression  $\ln [(a_t - a_\infty)/(a_0 - a_\infty)]$  versus time.  $a_0$ ,  $a_t$ , and  $a_\infty$  are the radioactive counts associated with the seeds at time = 0,  $t$ , and infinity, respectively (W.D. Stein, *Transport and Diffusion across Cell Membranes*, Academic Press, 1986, p. 59). The results show that the presence of  $10^{-5}$  M FC during the first 42h of incubation diminished the permeability of plasmalemma to water: the gradient of the regression line correlating the values of  $\ln [(a_t - a_\infty)/(a_0 - a_\infty)]$  with the time of efflux was  $b = -0.0066$  in seeds incubated in water and  $b = -0.0045$  in seeds incubated with FC. To evaluate whether this effect was linked to the presence of the toxin or to different conditions taking place during germination, due to the action of the toxin, we administered  $10^{-5}$  M or  $10^{-4}$  M FC during the phase of efflux to seeds incubated 42h in water. No immediate effect of FC was detectable. We also performed some experiments using  $\text{D}_2\text{O}$  (50%, v/v) labeled with  $^3\text{H}_2\text{O}$  for both loading and unloading the seeds, hypothesizing a different permeability of the plasmalemma to  $\text{D}_2\text{O}$ , what would have allowed us to better evidenciate eventual effects of FC. Though the plasmalemma showed a lower permeability to  $\text{D}_2\text{O}$  ( $b = -0.0054$ ), there was no effect linked to the presence of either  $10^{-5}$  M or  $10^{-4}$  M FC during the efflux phase. The results seem to indicate that when FC is administered to the seeds for long times (42h), it can modify the water permeability characteristics of the plasmalemma. Whether this effect is directly linked to the presence, in the time, of the molecule, or is the consequence of processes (probably, plasticization of cell walls and decrease in cell turgor) promoted by the toxin, is to be ascertained.

#### FUSICOCIN RECEPTOR: MONOMERIC OR MULTIMERIC PROTEIN?

P. ADUCCI,<sup>1</sup> A. BALLIO,<sup>2</sup> V. FOGLIANO,<sup>1</sup> M.R. FULLONE,<sup>2</sup> M. MARRA<sup>1</sup> and D. VERZILI<sup>2</sup>

<sup>1</sup> Dipartimento di Biologia, Università di Roma «Tor Vergata».

<sup>2</sup> Dipartimento di Scienze Biologiche, Università di Roma «La Sapienza».

In the study of the mode of action of fusiocin (FC), the mechanism of activation of  $\text{H}^+$ -ATPase by the interaction of FC with specific receptors in the plasma membrane has become particularly interesting. Purification of these binding proteins is therefore desirable for understanding the nature of the signal triggered by FC. Attempts so far reported by other authors have afforded preparations not yet thoroughly purified. In our laboratory purification of FC binding proteins from maize shoots was performed by five steps of FPLC and HPLC using adsorption, ion exchange and gel filtration columns. The activity of all fractions was monitored by a specific FC binding assay. Most of the activity was lost after the first three steps of purification, possibly because of the removal of components stabilizing the receptors; the addition of suitable detergents overcomes this inactivation.

The specific activity of the purified fractions was increased several thousand times. The SDS-PAGE silver stained profiles of the fractions evidence proteins with molecular weights of 90, 60 and 30 KDa. These results are consistent with a mul-