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Oxidative stress imposes damage in plant cells at various levels. Most important is the effect on the oxidation state of proteins. This oxidation has several consequences, one of which appears to be an increased susceptibility to proteolytic attack, that may or not be mediated by the ubiquitin-proteasome pathway.

It was noticed that plants respond to several types of environmental stress (heavy metals, cold and heat shocks and others), with the generation of reactive oxygen species that may lead to protein oxidation. Experiments were performed to determine if the exposure of the aquatic, higher plant *Lemna minor*, to a variety of environmental stresses induce the oxidation of intracellular proteins.

To study and test this hypothesis, an oxidized protein detection kit was used. Its fundamentals are based on the derivatization of the carbonyl groups (introduced in the protein side chains as a consequence of the oxidative process) to 2,4-dinitrophenylhydrazone, subsequently detected by SDS/PAGE and immunoblotting (using antibodies specific for these derivatized groups).

A clear and gradual increase in the level of protein carbonyl groups was detected in *L. minor* subjected to H₂O₂ stress, which confirms the reliability of the detection method. In the future, several other stresses will be analysed.

PS4-039

Partially denatured proteins are kept in a folding competent state by heat stress granules built from two classes of cytoplasmic small Hsps

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During heat stress plants accumulate large amounts of small heat stress proteins (sHsps) in all cellular compartments. These proteins are encoded by a multigene family¹. There are two different classes of cytoplasmic sHsps, both of which are required to build large complexes coined heat stress granules (HSGs)^{2,4}. Proposed functions of these complexes include storage of silent mRNAs released from polysomes during stress, and repair of denatured proteins. Using immunofluorescence and peptide library analysis we found no evidence for a role of sHsps in mRNA storage³. Denatured proteins associate with HSGs, sHsps keep these proteins in a state suitable for poststress refolding^{2,3}.

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PS4-040

Initial characterisation of the plant ubiquitin-proteasome pathway response to oxidative stress: exposure of *Lemna minor* to hydrogen peroxide

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