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Poster Abstract – B.08

REDOX CONTROL OF GLUTENIN SUBUNIT ASSEMBLY IN TOBACCO PROTOPLASTS

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The maintenance of a correct redox state in the endoplasmic reticulum (ER) is essential to allow efficient disulphide bond formation and reshuffling, protein folding and protein degradation. Here we show that the polymerization pattern of a low-molecular-weight glutenin subunit (LMW-GS) expressed in tobacco leaf protoplasts is influenced by treatments that can potentially affect the ER redox state. Treatment with a reducing agent was sufficient to reduce interchain disulphide bonds *in vivo* and the effect could be readily reverted by restoring oxidizing conditions. Conversely, treatment with an oxidizing agent promoted polymer formation. This indicates that the ER redox state plays a crucial role in determining the polymerization state of the LMW-GS. To assess the role of cytosol in the control of the ER redox state, we analyzed the polymerization state of LMW-GS in microsomes isolated from tobacco leaf protoplasts. While cytosol removal led to the formation of large aggregates, addition of reduced glutathione was sufficient to restore the initial polymerization pattern. These results raise the possibility that a flux of reducing equivalents from the cytosol to the ER, possibly in the form of reduced glutathione, is essential to establish a correct redox state and to set the initial polymerization pattern of LMW-GS.