Proteomic analysis of the *Mycocentrospora acerina*-carrot interaction during storage.

LOUARN S[1], JENSEN B[1], NAWROCKI A[2] and JENSEN ON[2]
[1] Department of Plant Biology and Biotechnology, Faculty of Life Sciences, University of Copenhagen;
[2] Department of Biochemistry and Molecular Biology, University of Southern Denmark.
louarn[a]life.ku.dk

During post harvest storage, a large proportion of carrots (more than 50%) may have to be discarded due to the development of liquorice rot caused by *Mycocentrospora acerina*. This fungus is soil borne and brought into the store in to soil adhering to the root. Liquorice rot development is mainly related to physiological or structural resistance of carrot, therefore the control of this storage disease is based on cultural practices and storage conditions.
It is believed that carrots at the beginning of storage can resist disease developments due to chemical defence mechanisms involving some proteins, peptides and secondary metabolites. The hypothesis is that proteome changes during storage of carrots are related to the susceptibility to *M. acerina*. During root-pathogen interactions, several genes have been reported to provide resistance against pathogens but only few proteins have been identified using proteomic approaches. Little is known about proteins involved during *M. acerina* - carrot interaction.
The carrots used in this study are grown under two different agricultural practices (one conventional, one organic) in order to investigate the effect of the cropping system on the susceptibility to liquorice rot.
We developed a bioassay for infection studies of *M. acerina* on conventional and organic carrots in order to determine the important time points of the infection process. Then the proteome is investigated at these different time points. The protocol for extraction of proteins has been improved so that it can be used to obtain an optimal recovery of proteins from both plant and pathogen on their own as well as from infected carrot roots. Proteomes of carrot and of *M. acerina* are characterized by two dimensional gel electrophoreses and the proteins whose synthesis varies significantly in the course of pathogen infection are identified by mass spectrometry (MALDI TOF-TOF).