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Drought effects on photosynthetic enzymes, metabolites and electrophoretic protein pattern in *Anoectochilus formosanus*

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Objectives:

To study the drought effects on some photosynthetic enzymes, metabolites and electrophoretic protein pattern in *Anoectochilus formosanus*.

Materials and Methods:

Plantlets of *Anoectochilus formosanus* Hayata were cultured for six months in MS medium supplemented with 0.5 mg l⁻¹ N6-benzyladenin, 0.5 g activated charcoal, 0.07 % agar and 20 g l⁻¹ sucrose. Six months old in vitro plantlets were transferred into ex vitro condition. Drought was imposed by withholding water supply. Gas exchange parameters were determined by IRGA, photosynthetic enzymes and metabolites by spectrophotometer and proteomics with SDS-PAGE and 2-D IEF/SDS-PAGE.

Result and Discussion

With the imposition of drought Pn, gs, Fv/Fm and Fv'/Fm', ETR, PSII and CO₂ decreased. Short term CO₂ enrichment inhibited the drought induced

photoinhibition on gas exchange and fluorescence parameters. Rubisco (EC 4.1.1.39), PEPC (EC 4.1.1.31), NADP-MDH (EC 1.1.1.82) activities and protein, OAA contents decreased while PEPC (EC 4.1.1.49) activity, NADP and malate contents increased.

SDS-PAGE and 2-D IEF/SDS-PAGE revealed that 15 protein spots qualitatively and quantitatively decreased while 2 protein spots increased. Detailed proteomics with the use MALDI-TOF MS and/or ESI MS-MS to determine the peptide sequence information and modifications of specific amino acids within the peptide is in progress.

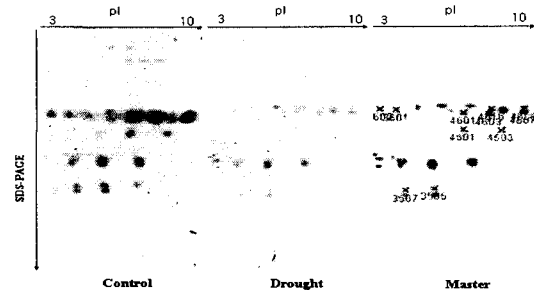


Fig.1. Two-D IEF/SDS-PAGE protein pattern in ex vitro *A. formosanus*

Fig. 1. Drought effect on electrophoretic protein pattern in *Anoectochilus formosanus*. From the analysis with PDQuest software it was observed that 15 protein spots qualitatively and quantitatively decreased while 2 protein spots increased