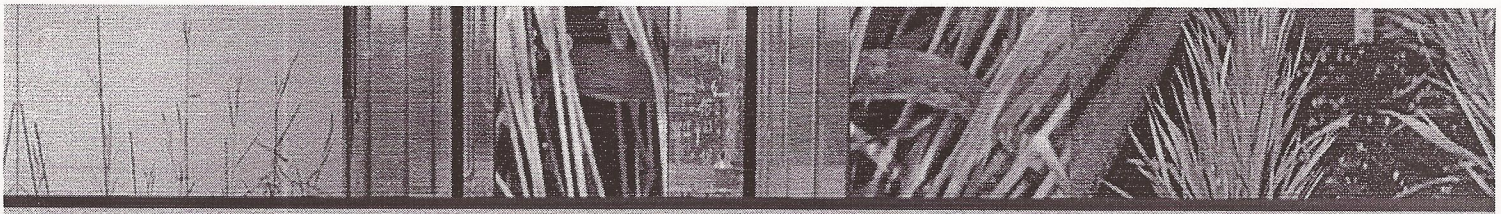

Organized by

CGR UNIMORE
CENTER FOR GENOME RESEARCH

1st International Brachypodium Conference

University of Modena and Reggio Emilia
Complesso San Geminiano

19 - 21 June 2013, Modena, Italy

ABSTRACT BOOK

1st International Brachypodium Conference - June 19-21 2013, Modena, Italy
Session 6 - Brachypodium development and growth

S6.P01 Preliminary study on activity of nitrogen enzymes and energy metabolism in *Brachypodium distachyon*

Nargul Omirbekova, Aizhan Zhussupova, Aldiyar Malik, Zhasulan Almaganbetov, Leyla Zhakaeva

Al-Farabi Kazakh National University, Almaty, Kazakhstan.

aizhan.zhusupova@gmail.com

Abstract

Glutamate plays central role in nitrogen metabolism. Basic way of catabolism of glutamate is carried out by NAD-dependent glutamatedehydrogenase.
For cereals important indicators are the activity of nitrogen enzymes and energy metabolism. So, the main task of the experiment was the preliminary study on those of *Brachypodium distachyon*.
Leaves of 14-days old seedlings served as material for the enzymes isolation. Cell-free extracts were subjected to gel-chromatography on column with Sephadex G 50. Malate, NAD, glutamate served as substrates for MDH-GOAT assay. Malate, NAD served as substrates for MDH assay. 2-oxoglutarate, NADH, ammonium sulfate served as substrates for GDH assay.
The optical measurement was carried out by spectrophotometer Ultrospec-110 pro. Determination of total protein content was carried out by microbiurete Beilly method using Benedict's reagent under the wave length of 330 nm. Activity (μM coenzyme per ml) of nitrogen metabolism and energy metabolism enzymes, GDH, MDH-GOAT and MDH, correspondingly, was determined at 340 nm.
The results of study have shown that the activity of MDH-GOAT in leaves of seedlings was equal to 36.29 μM/ml, while GDH - 4.03 μM/ml. MDH activity - comprised 209.68 μM/ml.
It is generally known, that MDH-GOAT is responsible for the nitrogen metabolism in plants and plays important role in detoxification of the products of protein degradation, taking place during the processes of abiotic and biotic stress, i.e. salinity, drought, etc. Thus, plants with high MGH-GOAT activity and low GDH activity are regarded as more resistant to adverse environmental factors, what will be shown by further studies.

Keywords
nitrogen enzymes activity, energy metabolism, *Brachypodium distachyon*