



Table of Contents

IN PRESS

CJGPB 2014

CJGPB 2013

CJGPB 2012

CJGPB 2011

CJGPB 2010

CJGPB 2009

CJGPB 2008

CJGPB 2007

CJGPB 2006

CJGPB 2005

CJGPB 2004

CJGPB 2003

CJGPB 2002

CJGPB

Home

Editorial Board

For Authors

- **Authors
Declaration**
- **Instruction
to Authors**
- **Guide for
Authors**
- **Copyright
Statement**
- **Submission**

For Reviewers

- **Guide for
Reviewers**
- **Reviewers
Login**

Subscription

Czech J. Genet. Plant Breed.

Antioxidant enzymes changes in response to drought stress in ten cultivars of oilseed rape (*Brassica napus* L.)

Czech J. Genet. Plant Breed., 46 (2010): 27-34

The study was undertaken to identify the responses of antioxidant enzyme activities and their isozyme patterns in seedlings of 10 oilseed rape (*Brassica napus* L.) cultivars under drought stress conditions. Plants were grown under three irrigation regimes (FC; field capacity, 60% FC and 30% FC) in a greenhouse. Drought stress preferentially enhanced the activities of superoxide dismutase (SOD) and guaiacol peroxidase (POD) whereas it decreased catalase (CAT) activity. Licord with the highest level of enzyme activity under both optimum and limited irrigation regimes is reported as the most tolerant cultivar. Whereas Hyola 308 and Okapy, having the lowest enzymes activities, are mentioned as cultivars sensitive to drought stress. The native polyacrylamide gel electrophoresis (PAGE) analysis detected eight SOD isozymes. Oilseed rape leaves contained three isoforms of Mn-SOD and five isoforms of Cu/Zn-SOD. The expression of Mn-SOD was preferentially enhanced by drought stress. Five POD isoforms were detected in oilseed rape leaves. The intensities of POD-4 and -5 were enhanced under drought stress. According to the results, the appearance of new isozyme bands under drought stress conditions may be used as a biochemical marker to differentiate drought tolerant cultivars under drought stress.

Keywords:

catalase; guaiacol peroxidase; isozymes; oilseed rape; superoxide dismutase; water stress

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