中国农学通报 2011, 27(第9期4月) 176-179 DOI: ISSN: 1000-6850 CN: 11-1984/S

农学—研究报告

甘蓝型油菜雄性不育系09A花蕾发育过程中生理生化特性研究

王瑞雪[1],沈亮余[2],邹燕[2],张涛[1],龚慧明[2]

1. 重庆师范大学生命科学学院

2.

摘要:

通过分光光度法，对油菜细胞质雄性不育系09A和保持系09B不同发育时期花蕾中POD、CAT、SOD、APX的活性和MDA、游离Pro含量进行了测定，并讨论分析了与雄性不育之间的关系。结果表明：不育系09A不同发育阶段花蕾中CAT、SOD、APX三种酶活性均低于09B；POD活性在不育系花蕾发育早期低于09B，但随着花蕾的发育，09B的POD活性逐渐下降，而09A的POD活性则逐渐升高；不育系09A的MDA含量在整个花蕾发育过程中均高于09B，而Pro含量则低于09B。

关键词： 氧化损伤

Studies on the Physiological and Biochemical Characters in Developing Bud of Male Sterile line 09A of Brassica napus

Abstract:

The enzyme activities of the rapeseed cytoplasmic male sterile lines of 09A and fertile lines of 09B , including peroxidase(POD), catalase(CAT), superoxide dismutase(SOD) and ascorbic acid peroxidase (APX) of different development stages of bud, were assayed by using spectrophotometry, the relationship between four kinds of protective enzyme activity and cytoplasmic infertility were investigated in this paper. At the same time, the content of malondialdehyde (MDA) and free proline were also assayed by spectrophotometry. The results indicated that along with the development of the bud, the enzyme activities of CAT, SOD, and APX were lower than fertile lines. POD activity was lower than fertile lines in the early development of the bud, but with the development of the bud growth to later period, POD activity of fertile lines of 09B gradually declined, and the POD activity of cytoplasmic male sterile was increasing gradually, and higher than 09B at last. In the cytoplasmic male sterile lines 09A, during the development of the bud, the content of the MDA were always higher than 09B, but the content of proline were lower than the fertile lines 09B.

Keywords: oxidative damage

收稿日期 2011-01-19 **修回日期** 2011-02-17 **网络版发布日期** 2011-04-25

DOI:

基金项目:

通讯作者: 张涛

作者简介:

作者Email: zht2188@126.com

参考文献：

[1]廖志强，况晨光，许丽芳，等.中国甘蓝型油菜细胞质雄性不育的主要类型及在育种实践中的应用[J].中国农学通报,2010,26(3):105-110 [2]朱彦涛，李殿荣，郭霭光，等.甘蓝型油菜细胞质雄性不育系Polima A和陕 2A的研究进展[J].分子植物育种,2009,7(1):5-15 [3]邓明华，文锦芬，邹学校，等.辣椒细胞质雄性不系的物质代谢和过氧化物酶分析[J].云南农业大学学报,2007,22(6):791-794 [4]陈贻竹.nullB. 帕特森. 低温对植物叶片中超氧化物歧化酶、过氧化物酶和过氧化氢水平的影响[J].. 植物生理学报,1988,:- [5]Cakmak I, Marschner H.Magnesium deficiency and high light intensity enhance activities of superoxide dismutase, ascorbate peroxidase, and glutathione reductase in bean leaves[J].Plant Physiology,1992,98:1222-1227 [6]刘凤权, 王金生.水杨酸对水稻叶片抗氧化酶系的影响[J].农业生物技术学报,2001,9:396-399 [7]赵世杰，许长成,邹

琦，等.植物组织中丙二醛测定方法的改进[J].植物生理学通讯,1994,30(3):207-210 [8]张治安.[J].张美善，蔚荣海. 植物生理学实验指导[M]．中国农业科学技术出版社,2004,:- [9]安岩，沈火林，乔志霞.胡萝卜雄性不育系和保持系生理生化特性的比较分析[J].中国瓜菜,2008,1:3-7 [10]梁艳荣，胡晓红，张颖力，等.植物过氧化物酶生理功能研究进展[J].内蒙古农业大学学报,2003,2(24):110-113 [11]田国忠，李怀方，裘维蕃.植物过氧化物酶研究进展[J].武汉植物学研究,2001,19(4):332-344 [12]龚莉，王国槐，官春云，等.转基因油菜雄性不育系15A生化特性研究[J].作物研究,2005,19(3):185-188 [13]贺学勤，田自华.甜菜胞质雄性不育系及保持系营养生长期末端氧化酶和ATP酶活性比较分析[J].西北植物学报,2008,28(8):1614-1618 [14]罗来水，霍光华，刘勇，等.桃雄性育性与花器官内游离氨基酸含量的关系[J].果树科学,2000,17(4):255-260 [15]逮红栋，巩振辉，黄炜，等.9个辣椒雄性不育材料花蕾生理生化特性研究[J].西北植物学报,2006,26(4):0832-0835 [16]孙日飞，方智远，张淑江，等.萝卜胞质大白菜雄性不育系的生化分析[J].园艺学报,2000,27(3):187-192

本刊中的类似文章
