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包台型水稻不育系花药发育过程中的Ca²⁺分布

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Calcium Distribution in the Anthers of Baotai Type Cytoplasmic Male Sterile Rice During its Development

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摘要 用焦磷酸钾沉淀法研究了包台型不育水稻及其保持系花药发育早期细胞中的Ca²⁺分布变化,从花粉母细胞时期开始,不育系与保持系花药中的Ca²⁺分布出现差异,不育系药壁外层和药室内壁及药隔中均有Ca²⁺出现,而保持系花药中基本没有Ca²⁺分布,在减数分裂时期表现更加明显,不育系药壁和药隔中的Ca²⁺相对于花粉母细胞时期明显地有所增加,特别是绒毡层细胞和药隔中木质部细胞的次生加厚壁上Ca²⁺增加尤其明显,而保持系花药中的Ca²⁺较少,笔者从花药发育的更早期去寻找水稻雄性不育的机理。

关键词: 水稻 雄性不育 焦磷酸钾沉淀法 花药

Abstract: Potassium pyroantimonate technique was used to investigate the Ca²⁺ distribution in the anthers of Baotai type cytoplasmic male-sterile rice (*Oryza sativa* L.) and its maintainer line. There were some differences between sterile and fertile anthers during the pollen mother cell stage. Some Ca²⁺ were found in epidermal cells, endothecium and vascular bundle of the sterile rice, whereas almost no Ca²⁺ in fertile anthers. The differences were further improved at the meiosis stage. Ca²⁺ in cells of sterile anthers' wall and vascular bundle apparently increased, especially at tapetal cells and the second wall of trachea. It was manifested that at the early stage of anther's development, gene expression and metabolism of fertility in the sterile and fertile anthers appeared differences, which caused the pollen abortion afterwards. The phenomena offered a new ponder for us on the male sterile mechanism research of the rice. In other words, we should seek the mechanism of rice male sterile at the early development of anther.

Key words: rice male sterile potassium pyroantimonate technique anther

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[1] CHAUBAL R, REGER B J. Relatively High Calcium is Localized in Synergid Cells of Wheat Ovaries [J]. Sex Plant Reprod, 1990, 3: 98-102.

[2] REGER B J, CHAUBAL B J, PRESSEY R. Chemotropic Responses by Pearl Millet Pollen Tubes [J]. Sex Plant Reprod, 1992, 5: 47-56.

[3] FAN L M, YANG H Y, ZHOU C. Role of Calcium-Calmodulin Signal System in Pollen Germination, Pollen Tube Growth and Generative Cell

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Division [A].In:Zhai Z H,ed.Triends in Cell Biology,Vol II [C].Beijing:Beijing Normal University Press,1997,63-71(in Chinese).

- [4] MALBO R,READ N D,PAIS M S,et al.Role of Cytosolic Free Calcium in the Reorientation [J].Plant Cell,1996,8:1 935-1 949.
- [5] MASCAREUBAS J P,LLONAND M.Chemotropic Response of Antir Rhinum Majus Pollen to Calcium [J].Nature,1962,196:292-293. 
- [6] WANG T,TONG Z.Changes in Anther Microstructure of the Photoperiod-Sensitive Genic Male Sterile Rice [J].Acta. Agr. Sin.,1992,18(2):132-135.
- [7] YU Q, XIAO Y H, LIU Wen-fang.Primary Research of the Role of Ca²⁺-CaM in the Fertile Transformation of HPGMR [J].J. Wuhan University,1992, 1:1
- [8] -126.
- [9] KEVIN C V.Handbook of Plant Cytochemistry Volume II :Other Cytochemical Staining Proceeding [M].the United States:CRC Press,1987.
- [10] DALE S,COLIN B,JEFFREY F H.Communicating with Calcium [J].the Plant Cell,1999,11:691-706.
- [11] ZHU Ying-guo.Biological Tudy on Rice Male Sterile [M].Wuhan:Wuhan University Academic Library Press,2000.
- [12] YE Xiu-lin,EDWARD YEUNG,XU Shi-xiong,et al.Microtubule Structure and Male Sterility in a Gene-Cytoplasmic Male Sterile Line of Rice [J].Zhen Shan 97A
- [13] Acta. Bot. Sin.,2003,45(2):183-192.
- [14] XU Shi-xiong,LIU Xiang-dong,FENG Jiu-huan,et al.Comparative Studies on the Changes of Microtubule Distribution and Reorganization During the Meiotic Stages of Development in Normal (IR36) and a Temperature/Photoperiod Sensitive Male Sterile Line (Peiai 64S) of Rice (Oryza Sativa) [J].Acta. Bot. Sin.,2001,43(3):221-226.
- [1] 吴光辉,黄丽芳,蒋建雄.湘西辣椒花药离体培养及其再生植株染色体数目的变异[J].吉首大学学报自然科学版,2012,33(1):81-84.
- [2] 刘家熙,苏立娟,陈祖铿,席以珍,刘晓瑞.玉簪属花药结构和花粉发育[J].吉首大学学报自然科学版,2007,28(6):81-86.
- [3] 肖辉海,陈良碧,胡一鸿.高温敏感不育水稻幼苗生长发育的热激反应[J].吉首大学学报自然科学版,2001,22(3):13-15.
- [4] 曹赐生,王海华.稻白叶枯菌弱毒株诱导的系统抗性——兼论与防御酶活性的变化[J].吉首大学学报自然科学版,2000,21(2):58-62.

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