

论文

甜菜无融合生殖单体附加系M14大孢子发生的超微结构

丁常宏¹, 申家恒^{1,*}, 郭德栋², 尚娅佳¹, 陆俊萍¹

1哈尔滨师范大学生命与环境科学学院生物学系, 黑龙江哈尔滨150025; 2黑龙江大学生命科学学院, 黑龙江哈尔滨150080

摘要:

应用透射电镜技术探求甜菜单体附加系M14 (*Beta vulgaris* L.,VV+1C, 2n=18+1)有性生殖大孢子与二倍体孢子生殖大孢子发生时的超微结构特征,了解有性生殖和无融合生殖起始细胞的超微结构差别。甜菜单体附加系M14为兼性无融合生殖体,大孢子发生有韭型、蝶须型和蓼型三种类型。韭型和蓼型大孢子发生时均起源于大孢子母细胞,二分体之前从形态结构上难以区分;减数分裂前期I,细胞核中出现核液泡,形成联会复合体,细胞质改组,细胞壁上沉积胼胝质。韭型大孢子发生时,只进行减数第一次分裂,不发生减数第二次分裂,形成二分体,珠孔端二分体细胞退化,合点端二分体细胞发育为二倍体功能大孢子。蓼型二分体的珠孔端细胞在减数第二次分裂前或分裂过程中退化,合点端细胞经减数第二次分裂形成两个细胞,构成三分体,最终合点端大孢子发育为单倍体功能大孢子。蝶须型大孢子发生是M14中唯一的二倍体孢子无融合生殖方式,其大孢子发生时大孢子母细胞不发生减数分裂,不出现核液泡,未形成联会复合体,无细胞质改组,细胞壁上缺乏胼胝质的沉积和缺乏胞间连丝,这些可作为二倍体孢子无融合生殖的鉴定指标。

关键词: 甜菜无融合生殖单体附加系M14 兼性无融合生殖 大孢子发生 韭型 蝶须型 蓼型 超微结构

Ultrastructure of Megasporogenesis in Facultative Apomictic Monosomic Addition Line M14 of *Beta corolliflora* of Sugar Beet

1College of Life and Environmental Sciences, Harbin Normal University, Harbin 150025, China; 2College of Life Sciences, Heilongjiang University, Harbin 150080,China

1College of Life and Environmental Sciences, Harbin Normal University, Harbin 150025, China; 2College of Life Sciences, Heilongjiang University, Harbin 150080,China

Abstract:

Research on ultrastructure of megasporogenesis facultative apomictic monosomic addition line M14 of *Beta corolliflora* of sugar beet by TEM, in order to get the distinctions between the initial cells of sexual reproduction and apomixes. The embryo-sac development of M14 can be classified into three types: *Allium odorum*-type, *Antennaria*-type, and *Polygonum*-type. There was little difference between *Allium odorum*-type and *Polygonum*-type until the stage of dyads. At meiosis I, nuclear vacuoles, synaptonemal complexes showed up, cytoplasmic components underwent differentiation, callose deposited in the wall. The megasporocyte of *Allium odorum*-type only underwent meiosis I to form a dyad, and then the micropylar dyad cell of *Allium odorum*-type degenerated quickly, while the chalazal one developed into diploid functional megaspore. In *Polygonum*-type the micropylar dyad cell degenerated quickly, while the chalazal one finished meiosis II to form two unequal-sized megaspore. The megaspore at chalazal end developed into haploid functional megaspore. *Antennaria*-type was the only fashion of apomictic recreation of M14. Ultrastructure observation on M14 showed the signs of diploid apomictic recreation: no meiosis, no nuclear vacuoles, no cytoplasmic components differentiation, no callose deposition, and no plasmodesmata.

Keywords: Monosomic addition line in sugar beet Facultative apomixes Megasporogenesis *Allium odorum*-type *Antennaria*-type *Polygonum*-type Ultrastructure

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通讯作者: 申家恒, E-mail: hsdshenjiaheng@yahoo.com.cn

作者简介:

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