

研究论文

# 甜菜无融合生殖单体附加系M14大孢子发生期间细胞壁胼胝质的变化

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**摘要** 应用脱色苯胺蓝诱导荧光法观察了甜菜单体附加系M14 (*Beta vulgaris* L., VV+1C, 2n=18+1) 正常有性生殖与二倍体孢子生殖时, 大孢子发生期间细胞壁内胼胝质的变化, 结果如下。非型 (*Allium odorum*-type) 胚囊大孢子发生时, 自大孢子母细胞的珠孔端细胞壁内出现胼胝质荧光, 并逐渐扩展到整个细胞壁, 中期 I 至末期 I 细胞壁呈现胼胝质荧光。二分体时, 珠孔端大孢子细胞壁内胼胝质荧光消失, 二分体之间的横壁以及合点端功能大孢子的侧壁上荧光明显。二倍体功能大孢子的合点端细胞壁内的胼胝质荧光消失。单核胚囊形成后, 其细胞壁内无胼胝质荧光, 而退化的大孢子细胞壁胼胝质荧光显著。蝶须型 (*Antennaria*-type) 胚囊大孢子发生时, 大孢子母细胞、二倍体功能大孢子的细胞壁均无胼胝质荧光。蓼型 (*Polygonum*-type) 胚囊大孢子母细胞减数分裂时, 其珠孔端细胞壁出现胼胝质荧光, 并逐渐扩展到整个细胞壁。二分体、三分体、四分体时期, 胼胝质荧光主要存在于大孢子之间的横壁上, 侧壁内胼胝质荧光较弱。退化的大孢子细胞壁胼胝质荧光明显, 功能大孢子细胞壁上缺少胼胝质荧光。此外, 本文还讨论了大孢子母细胞减数分裂与细胞壁内沉积胼胝质之间的相关性。

**关键词** 甜菜单体附加系 (*Beta vulgaris* VV+1C, 2n=18+1) 兼性无融合生殖 大孢子发生 胼胝质

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## Dynamics of Callose Deposition in Cell Walls during Megasporogenesis in the Apomictic Monosomic Addition Line M14 of *Beta corolliflora* of Sugar Beet

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**Abstract** Callose in cell walls was observed by the callose aniline-blue fluorescence during megasporogenesis in line M14, a chromosome 9 monosomic addition line of *Beta corolliflora* Zoss. (*Beta vulgaris* L., VV+1C, 2n=18+1), in which the modes of reproduction are facultative apomixis, diplosporous and sexual reproduction. The results are as follows: *Allium odorum*-type. Callose first occurs in the wall of megasporocyte from the micropylar end, then gradually envelops the whole cell. Megasporocyte is surrounded by the wall with callose during metaphase I, anaphase I and telephase I. At dyads stage, callose in micropylar end begins to disappear, and callose fluorescence displays in the transverse walls between dyads and side walls of the diplosporous functional megaspore in chalazal end. As development goes on, callose fluorescence disappears in the chalazal wall of diplosporous functional megaspore. No callose fluorescence shows in the wall of mononuclear embryo sac after its formation, while thick callose deposits in the wall of the degenerative megaspore. *Antennaria*-type. There is no callose deposition in the wall from megasporocyte stage to diplosporous functional megaspore stage all along. *Polygonum*-type. During the process of megasporocyte meiosis, callose occurs first in the wall of megasporocyte from micropylar end, then gradually envelops the whole cell. Callose exists mainly in transverse walls during dyad, triad and tetrad stages, a little in side walls. Thick callose deposits in the walls of degenerative megaspores, while little in the wall of functional megaspore. In addition, correlations between the meiosis and callose deposition in the wall of megasporocyte have been discussed.

**Key words** Monosomic addition line in sugar beet (*Beta vulgaris* L. VV+1C 2n=18+1) Facultative apomixis Megasporogenesis Callose

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