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苏联球茎大麦有利基因引人普通小麦的研究[1)]

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摘要 本研究从1979年开始，用抗病性较强的苏联球茎大麦（4x）为父本，普通小麦品种中国春(6x）为母本进行属间杂交，经离体培养杂种幼胚，获得了属间杂种（FJ。杂种自交不育，用秋水仙素加倍亦不成功，而以中国春5B单体与之回交，获得回交一代（BCA ）。杂种F：形态为两亲的中间型，其花粉母细胞染色体数在24-30条之间。BC,F：代杂种的形态与F：相似，染色体数在45-49条之间（其中大多数细胞终变期有20-21个二价体和3-7个单价体）。BC11i,自交或回交均有部分结实。以后各代继续自交分离；于1985-1986年，分离出6个异源二体附加系（2n。2211）和异源八倍体（2，二2811)以及若干个与母本形态有明显差异的整倍体杂种后代（2，二2111)。这些整倍体和非整倍体后代中，有2个附加系的蛋白质含量较高2.30% 和20.37%)；在整倍体后代中有两个株系与其父本一样对小麦黄花叶病(WYMV)具有抗性，而其母本与浙江省当前推广的小麦品种均不抗病，说明球茎大麦抗黄花叶病基因可能已导人母本中国春小麦。

关键词 球茎大麦,中国春5B单体；远缘杂种,异源二体附加系,整倍体杂种,异源八倍体

分类号

Study onIntrogression of Useful Genes from Hordeum bulbosum to Common Wheat

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Abstract

Some F, intergeneric hybrids between whea, variety Chinese Spring (2n＝6x = 42) andHordeum bulbosum USSR (2n＝4x＝28) were obtained by dripping GA3 to the wheat stigmasone day after pollination and by culturing the young embryos in vitro 12-16 days later with 2.02% in seed setting. It was found that the hybrids were self-sterile, while in backcross withrnonosomic 5B of Chinese Spring as the male parent, three plants of BC,F, were obtained. Tln=fertility of backcrossing was 0.59%. The morphological characters of F, and BC,F, manifesteuan apparent hybrid vigor. Both the spike shape and structure of BC,F, were similar tothose of F,, The length and awn type of their spike were like that of the male parent, but the polyanthous of its spikelets like the female one. However, the flag leaves of BC,F, were evidentlylonger in size than those of F, and their parents. There were 24-30 chromosomes in manypollen mother cells of F, at metaphase 1, and there were 45--49 chromosomes (20-21 pairingbivalens and 3-i univalents) in most pollen mother cells of BC,F, at diakinesis. When BC,F,was self一crossed or backcrossed to either parent, a partial plants were fertile. The chromosome number of BC,F2 at diakinesis or metaphase 1 was 48-56 (some of them was 24-----28 pairingbivalents). The hybrids plants of BCtF3 segregated distinctely into four types in morphological characters and chromosomes number, but all of them were aneuploid, including monosomicaddition 'lines (2111＋11) and double inanosomic addition lines（2111＋11＋11). Thehybrid progenies segregated continuously in later years. In 1985-1986, 6 alien disomic ad一 dirion lines, alien octoploid and several euploid hybrids of T. aestivum-H. bulbosum wereproduced. Two addition lines had protein content of 22.3% and 20.37% (the female parentwas 16.16% and the male one 17.47%）respectively. Besides, it was found that two euploids progenies were as resistant to wheat yellow mosac virus disease (WYMV) as their male parentafter a two-year test. It might be proved that the resistant gene (WYMV) of H. bulbosum hadbeen transferred to common wheat for the first titre.

Key words Hordeum bulbosum Monosomic 5B of Chinese Spring Intergeneric by-Alien

disomicaddition lines Euploid hybrids Alien octoploid

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