SHORT COMMUNICATIONS

Chromosome Numbers of the Green Rice Leafhopper, *Nephotettix cincticeps* UHLER (Homoptera: Cicadellidae)¹

Chromosome numbers of cicadellids have been determined in very few species (MAKINO, 1950), and no informations were available regarding the chromosome numbers of the green rice leafhopper, *Nephotettix cincticeps* UHLER. During *in vitro* cultivation of leafhopper tissues, mitoses were frequently observed in the epithelial cell sheets developed from the embryonic tissues (MITSUHASHI and MARAMOROSCH, 1964; MITSUHASHI, 1965). At the mitotic prophase, individual chromosomes could be recognized, but they were not clear enough for immediate counting of chromosomes. In the present study, an attempt was made to determine chromosome numbers of *N. cincticeps* with the fixed materials.

The counting of chromosome was made on the embryonic cells, as somatic cells, undergoing mitoses, and on the spermatocytes and oocytes undergoing meioses. Three days after oviposition at 25°C, the embryos were taken out of their chorions and freed from their yolks. Testes and ovaries were excised from young adults. Embryos, testes and ovaries were then incubated for overnight at 25°C in RINGER-TYRODE'S salt solution containing colchicin at the final concentration of 10 γ per ml, and then transferred into 1 per cent aqueous solution of sodium citrate and kept in it for 30 minutes at 30°C. This was followed by fixation with 45 per cent acetic acid. The fixed materials were placed on slide glasses, covered with cover glasses, pressed gently from the top, and observed with phase contrast microscope. The examined materials were preserved by staining with acetic violet (0.75 per cent gentian violet in 45 per cent acetic acid) and by remounting with Canada balsam.

Somatic cells revealed 15 or 16 pairs of chromosomes at the mitotic early anaphase (Fig. 1, A and B), indicating that diploid numbers of chromosomes were 15 or 16 depending on the sex. In spermatocytes, chromosomes appeared in 7 paired bivalent chromosomes and 1 unpaired bivalent chromosome at the

meiotic early anaphase-I (Fig. 2, A and B). This unpaired chromosome was presumed to be X-chromosome. In oocytes, 8 paired bivalent chromosomes were recognized at the meiotic early anaphase-I. Thus it became evident that diploid numbers of chromosomes of *N. cincticeps* were 15 in males (2A + X) and 16 in females (2A + 2X). Autosomes consisted of 2 large and 5 rather short chromosomes, and X-chromosome was short.

When the embryonic tissues of *N. cincticeps* were cultivated *in vitro*, giant cells often appeared and they were assumed to be polyploid (MITSUHASHI, 1965). In the present study, polyploidy of the cells in the primary cultures of the embryonic tissues

Fig. 1. Chromosomes in the embryonic cell at the mitotic early anaphase. Bright phase contrast ($\times 2,400$). A: Male ($2n=15$). B: Female ($2n=16$).

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Fig. 2. Chromosomes in the spermatocyte at the meiotic early anaphase-I. A : Seven paired bivalent chromosomes and one unpaired bivalent chromosome can be recognized. Bright phase contrast ($\times 3,200$). B : Schematic representation of the chromosomes observed in Fig. 2, A. 1-7, autosomes; X, sex chromosome.

Alkaline Phosphatase Variations in the Mid-Gut of the Fall Webworm, *Hyphantria cunea* DRURY (Lepidoptera: Arctiidae)¹

The agar gel electrophoretic technique (OGITA, 1962) has proved to be a useful tool for the studies of multiple molecular forms of enzymes. In recent years enzymatic variations have been studied in a large number of different organisms. In this paper the author presents the finding of enzyme differ-

ences in fall webworm, *Hyphantria cunea* DRURY, electrophoretic variations in the mid-gut alkaline phosphatase.

The larvae of the fall webworm, reared on mulberry trees in mulberry garden were collected from Tokyo University campus, Tanashi Agricultural farm (Tokyo), Utsunomiya University campus (Tochigi) and Shinshu University campus (Nagano).

According to OLIVER (1964 a,b), there are two distinct types of the fall webworm in Louisiana. The

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