Peroxidase isozymes

Apical meristem and male flower buds had 5 isozyme bands designated as B, D, E, F and G whereas female flower buds had 7 bands designated as A, B, C, D, F, G and H. Bands A and C were new in female flower buds and these were not observed in apical meristems and in male flower buds, whereas band E recorded in the male flower buds was missing in the female flower buds. The intensities of individual bands also differed in both the sexes.

It has been reported that isozyme pattern of peroxidase enzyme found in one tissue differ from the other tissue of the same species or genotype at different stages of vegetative growth[5,6] or during transition to flowering.[3,4] Sudies with peroxidase in carrot and aspen cultures[7,8] indicate that isozymes may be sensitive markers of the differentiation. In addition, some investigators have measured enzyme activity as indicators of differentiation.[9]

In *R. communis*, higher peroxidase activity is associated with the male flower buds while more isozymes with female flower buds. The appearance of the two new bands A and C in female flower buds seems tobe specific for the development of female sex organs whereas the disappearance of a band E in the later suggests its possible inhibitory role for the development of the same (*i.e.* female flower buds).

The present finding on *R. communis* is contrary to our previous finding in dioecious systems viz. in *Coccinia indica*[3], *Morus nigra*[4] and in *Carica papaya* (unpublished) wherein higher peroxidase activity was related with femaleness and more number of isozymes with maleness. Specific isozyme band(s) were found only in male flower buds. It indicates that in *R. communis*, opposite mechanism is operating in the distribution of peroxidase enzyme during sex expression.

The highest activity recorded in *R. communis* was below the lowest activity recorded in *M. nigra*, *C. papaya* and *Coccinia indica*. This is probably because of the high proteinase activity in crude extracts of *R. communis*[10]. The cease in peroxidase activity after a few hours of extraction was perhaps due to digestion of the enzyme proteins in the extract.

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MIGRATION OF NUCLEAR MATERIAL IN CALLUS CULTURES OF *TRITICUM DICOCCUM* SCHULB.

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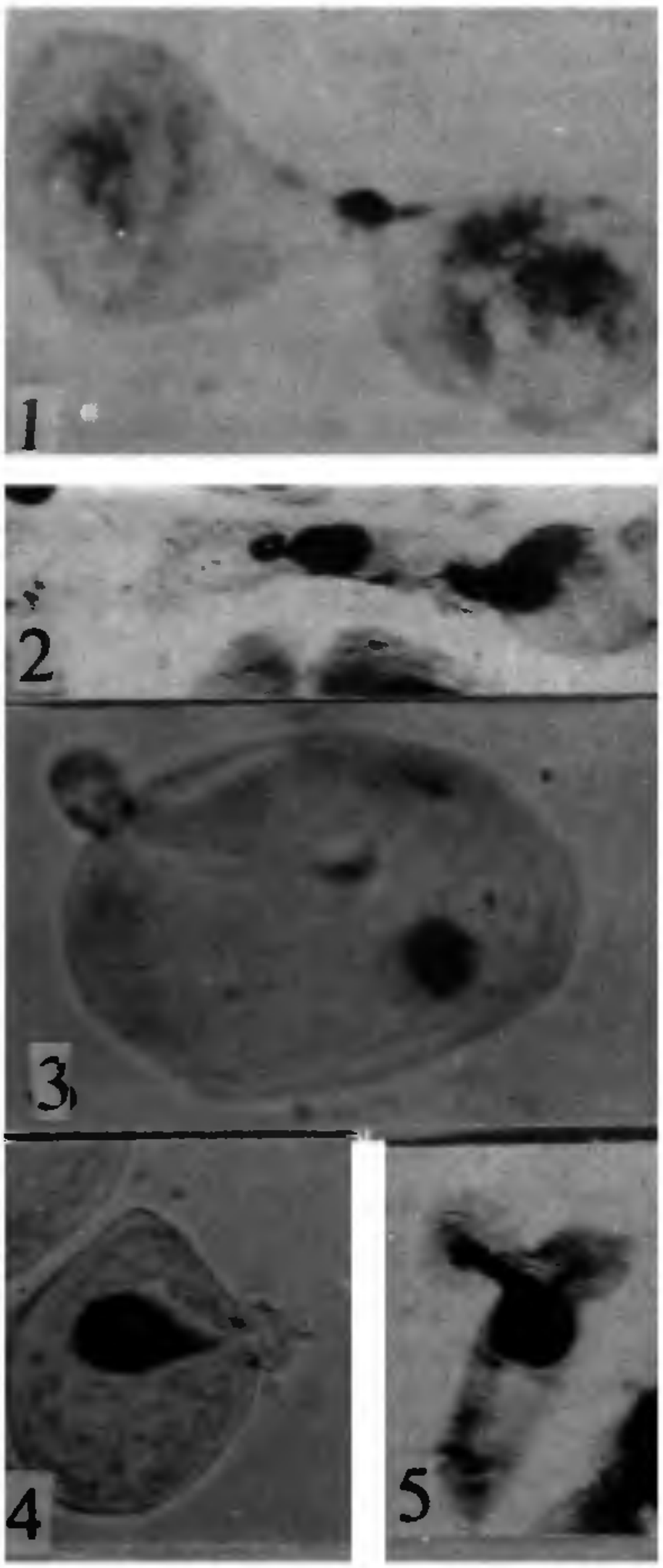
EARLIER studies on wheat cultures[1-4] had shown that a majority of the cell population was made up of aneuploid cells and the possible mechanisms for the production of aneuploid chromosome numbers are chromosome lagging at anaphase, multipolar spindles and splitting of nucleus into two. In the present report, a phenomenon of nuclear abnormality leading to aneuploid cell formation in *Triticum dicoccum* Schulb. is recorded.

Seeds of *Triticum dicoccum* were sterilized and germinated in aseptic conditions. Root segments were cultured in Murashige and Skoog's agar medium supplemented with 0.5 mg/l 2,4-dichlorophenoxy acetic acid (2,4-D). For cytological preparations, callus pieces were stained with feulgen after proper pretreatment and fixation.

Squash preparations of root calli revealed a remarkable variation in chromosome numbers and majority of the cell population was made up of aneuploid cells. In addition to numerical and structural changes of chromosomes, the spontaneous migration of nuclear material from one cell to another was observed. As seen from figure 1 the nuclear material moves through

a cytoplasmic channel in the cell wall. In some cases, this also results in the formation of micronuclei (figure 2). Regarding the future destination of the micronuclei, it can be supposed that most of these micronuclei are degenerated in the cytoplasm. Another peculiar nuclear migration similar to that of amitosis was also observed. In this case, successive migration of nuclear material was preceded by the formation of bud-like protuberance on the cell wall (figures 3–5).



Figures 1–5. 1. Migration of nuclear material through cytoplasmic channel. 2. Showing nuclear migration and formation of micronuclei. 3. Development of bud like protuberance on the cell wall. 4. Showing initiation of migration towards the protuberance. 5. Nuclear material migration into the protuberance.

The migration of nuclear material from one cell to another is of wide occurrence in callus cultures of *Triticum dicoccum*. From our investigation, it is assumed that 'communicating channels' are formed between two somatic cells which allow complete or partial migration of chromatin matter from one cell to another as in cytomixis. Although the significance of cytomixis is still debatable, some authors consider these as a mechanism for the production of aneuploid cells[5–7]. The predominance of aneuploid cells with occurrence of nuclear material migration in our findings corresponds to this view. Therefore, the migration of nuclear material may be considered as another possible mechanism for the development of aneuploid cells besides that of chromosome lagging at anaphase and multipolar spindle formation under *in vitro* conditions. In addition, the present results also reflect the possibilities for screening chromosomal variances from a mixoploid culture.

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AFLATOXIN CONTAMINATION IN NORMAL AND INSECT-DAMAGED KESARI (*LATHYRUS SATIVUS* L.) IN ANDHRA PRADESH

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CONSUMPTION of Kesari dal has been banned because of its causing lathyrism or paralysis of the lower limbs. A limited survey of (66 samples) contaminated Kesari