

analyzed as a preliminary trial. Analyses have been made with material fixed in Carnoy's fluid, following the Ogur-Rosen procedure for nucleic acid extraction and estimation.

Acid soluble RNA per unit weight of fixed tissue is significantly greater in asynaptic plants than in the normal sibs. The "apparent" DNA (probably containing some acid resistant RNA) is found to be in equal amounts in both normal and asynaptic material. The amount of "histones" (Daly and Mirsky) is only slightly higher in the asynaptic material.

Besides the possible effect of histones (Ansley's finding), an excess of RNA appears detrimental to meiotic pairing in asynaptic maize plants. In view of a similar situation in ameiotic maize, it appears interesting and necessary to examine in detail as to how the situation in asynaptic plants differs from that in the ameiotic ones. Further work will be undertaken with regard to this and other biochemical aspects.

-- S. K. Sinha

3. Chemically induced chromosomal asynapsis in maize.

Paper chromatographic studies have indicated the presence of some phenolic compounds in ameiotic maize plants and their virtual absence in the normal sibs (MNL 33). In the ameiotic plants meiosis is found to be replaced by a type of mitotic division. The possibility of converting meiosis to mitosis experimentally by the administration of several phenols has been investigated.

The compounds tested were: 1) phenol, 2) resorcinol, 3) hydroquinone, 4) catechol, 5) pyrogallol. Solutions of these compounds in two different concentrations, viz. 0.01M and 0.1M, were fed into the plants through cut stems for 24 hours about a week before the initiation of meiosis in the tassels. A few plants were similarly fed with distilled water to serve as controls. All plants were heterozygous for Inversion-4a against a KYS background. Two replicate plants were taken for each concentration of a particular compound. Pollen mother cells were examined 9 days after treatment.

At the higher concentration all compounds prevented an appreciable percentage of meiocytes from undergoing any division. The nuclei appeared pycnotic. However, no mitotically dividing meiocytes were observed. On the other hand, various degrees of asynapsis of chromosomes were noted. Since no asynapsis was observed in the control plants fed with distilled water, the effect was evidently due to phenols. A maximum degree of asynapsis was found in plants treated with 0.1M phenol. Other compounds produced less extreme effects at this concentration, and still less at the lower concentration. In most cells, where asynapsis was less drastic, at least one chromosome was found to be more severely affected than the rest. In some cells this could be identified as the chromosome heterozygous for the inverted segment. Thus the synapsis of the segment heterozygous for an inversion appears more readily affected. A second feature noted in the mildly affected cells was that the segments containing knobs were more frequently asynapsed than the other regions.

However, more thorough examination is necessary before ruling out the possibility of involvement of some phenolic compounds in suppression of meiosis or its conversion to mitosis.

-- S.K. Sinha

4. Effect of RNA on meiosis in maize.

The finding that there is an excess of RNA in ameiotic plants suggested the possibility of converting meiosis to mitosis by treatment with RNA. Treatments were made as above along with necessary controls. No mitotically dividing meiocytes could be observed. However, several other interesting