

Virus isolates were easily transmitted by sap but could not be transmitted through the seeds or by any of the six aphids tested, viz., *Aphis craccivora* Koch., *A. gossypii* Glove., *A. nerii* Boyer, *Lipaphis pseudobrassicae* Davis, *Myzus persicae* Sulz. and *Rhopalosiphum maidis* Fitch.

The infective sap showed negative reactions with the antisera against yellow mosaic virus, common bean mosaic virus, clover yellow mosaic virus, cowpea mosaic virus, potato virus X, red clover vein mosaic virus, southern bean mosaic virus, white clover virus and Wisconsin pea mosaic virus.

The symptoms produced on different hosts and physical properties of the virus under investigation are not in general agreement with those of other viruses infecting arhar, viz., cowpea mosaic virus^{2,9}, yellow and pale mosaic virus⁵ and common bean mosaic virus⁸. Also the present virus differs in its host-range, reaction and physical properties with the legume viruses limited to leguminosae¹⁰. The study indicates that the virus under discussion is an undescribed one. Therefore, it is proposed to designate it by a specific name as "arhar (pigeon pea) mosaic virus".

We are thankful to Prof. K. S. Bhargava, for facilities, Prof. C. W. Kuhn, Dr. M. Z. Maat and Dr. Koenig for the supply of antisera.

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Gorakhpur, U.P., August 21, 1975.

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EFFECT OF LECANORIC ACID ON MITOTIC DIVISION IN *ALLIUM SATIVUM*

THE phenolic groups of chemicals have been reported to have mutagenic action on dividing chromosomes and inducing fragmentation⁴⁻⁹. Levan and Tjio^{5,6} working with a number of phenols including pyrogallol, guaiacol, hydroquinone and resorcinol reported a high degree of chromosomal

aberrations due to the effect of phenolic group. The effect of lecanoric acid, on dividing cells, has been presented in this note.

The actively growing root tips of *Allium sativum* were dipped in 0.1 M aqueous solution of the acid for 1, 2 and 3 h. at room temperature, between 10 A.M. and 1 P.M. The treated root tips were clipped and fixed in 1:3 acetic alcohol and kept in the refrigerator for 24 hours, and then transferred to 70% alcohol for preservation. The root tips were squashed in aceto orcein.

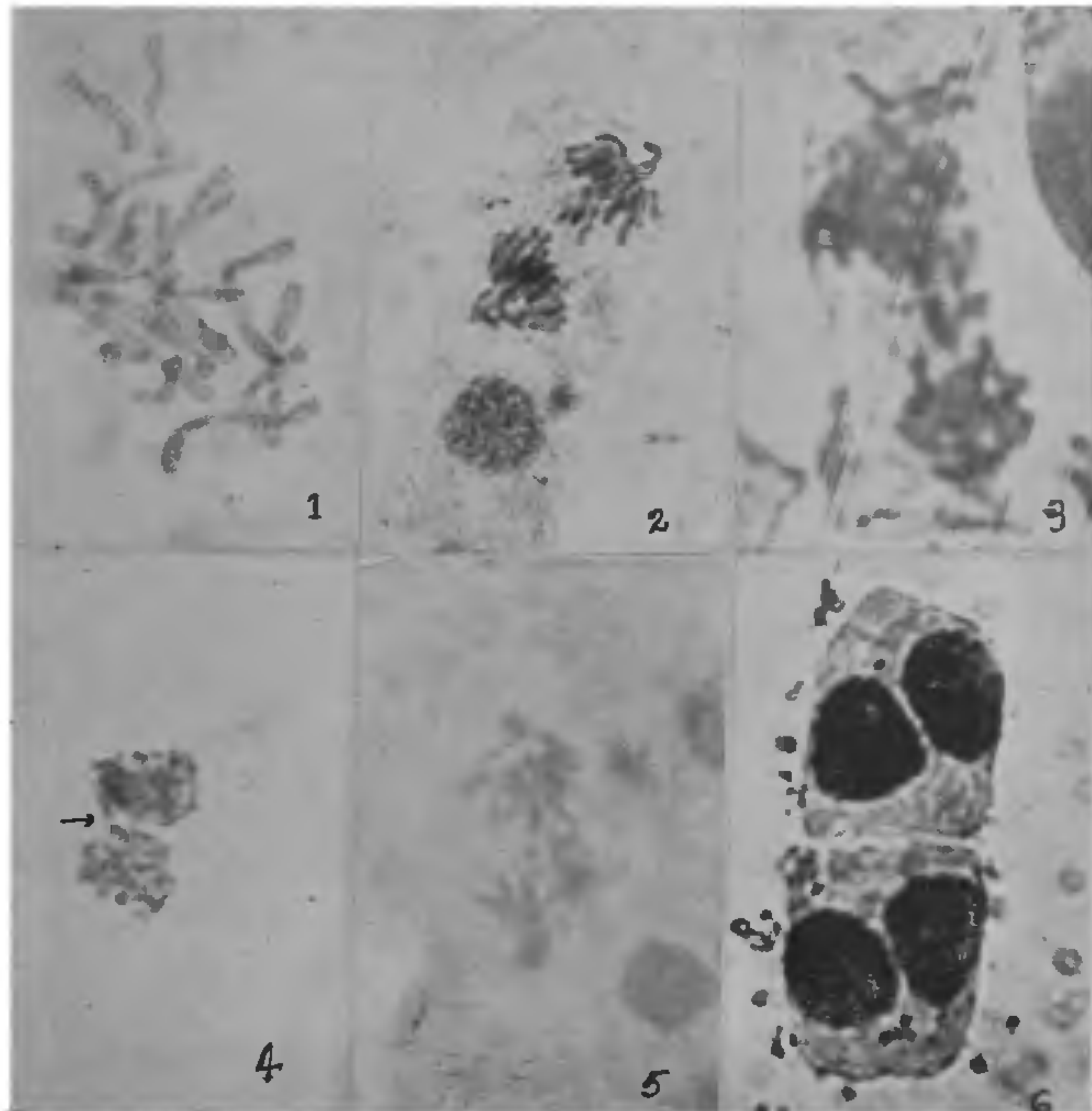
In general the chromosome condensation was delayed and was not complete even by metaphase (Fig. 1). The spindle was formed diagonally in the cell (Fig. 2). Some lagging chromosomes were observed at the equator while the chromatids of other chromosomes already reached the poles (Fig. 3). The entire chromosomes were seen connecting two sister nuclei (Fig. 4). This is probably due to the extreme delay in the division of centromeres of these chromosomes. Split spindles too were observed (Fig. 5) due to which chromosome groups of different sizes were seen scattered.

The appearance of diagonally arranged unequal sister nuclei in a cell were of common occurrence (Fig. 6). The double nucleated, cell formation is attributed to the failure of cell plate formation, during mitosis under the effect of the chemical.

The formation of diagonal spindle and inhibition of cell plate formation are reported earlier by several workers². The phenomena are reported to be common with the action of methylated and alkylated oxypurines, such as caffeine, theophylline and theobromine on dividing cells. The inhibition of cell plate formation naturally results in the appearance of binucleated cells. The appearance of unequal sister nuclei is of some interest. Kihlman² attributes such a phenomenon to the fusion of nuclei in unequal number in a multi-nucleated cell. In the present preparations multipolar or split spindles were seen even though multi-nucleated condition was not observed. Probably the fusion of these chromosomal groups in unequal number might have given rise to two unequal sister nuclei in a cell. In addition, the inclusion of lagging chromosomes into one of the two sister nuclei might have further added to its size. The appearance of the lagging chromosomes was noted earlier by several workers^{2,4}. They attribute this phenomenon to the non-synchronised division of the centromeres. The presence of an entire chromosome, connecting the two daughter nuclei (Fig. 4), seems to strengthen this presumption. High fragmentation of chromosomes through

the action of phenols is reported earlier by several workers^{5,6,8,9}, yet no significant fragmentation could be observed in the present experiment for 1-3 hrs of treatment with 0.1 M solution of the acid.

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FIGS. 1-6. Fig. 1. Non-condensed chromosomes at metaphase. Fig. 2. Diagonally arranged spindle with lagging chromosomes. Fig. 3. Telophase with diagonally arranged unequal sister nuclei and lagging chromosomes at the equator. Fig. 4. Arrow shows a chromosome with two chromatids in each arm and connecting sister nuclei. Fig. 5. Split spindle with groups of chromosomes of unequal sizes. Fig. 6. Double nucleated condition with diagonally arranged sister nuclei.

On the whole lecanoric acid seems to imbibe in it, the effects of methylated and alkylated oxypurines in inducing the appearance of diagonal spindle and unequal sister nuclei in a single cell.

We are highly thankful to Dr. P. S. Rao, Reader in Chemistry, Post-Graduate Centre, Vidyanarayapuri 506 009, Warangal, for providing us the chemical.

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FLORAL ANATOMY OF BORAGINACEAE

I. *Sericostoma pauciflorum* Stocks

THE family Boraginaceae has earlier attracted the attention of those interested in floral anatomy. Joshi¹, Lawrence² and Sharma³ have described the anatomy of the flower in several genera but *Sericostoma* remained untouched. As it shows certain points of interest the floral anatomy of *S. pauciflorum* Stocks has been described in the present paper. The material was collected from

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