viral activity and increase in peroxidase activity due to infection.

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MEETA BANERJEE.
H. S. SRIVASTAVA.
K. S. BHARGAVA.

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INHIBITION OF THREE STRAINS OF WATERMELON MOSAIC VIRUS BY BARK EXTRACTS*

SEVERAL plant virus inhibitors have been reported to be present in different parts of the higher plants (Dugger and Armstrong[3], Johanson[6], Gendron[5], Sill and Walker[9], Bawden[1], Crowley[2], Feldman[4], Ulrichova and Bracak[11]). Little attention has been given to the inhibitory activity of juices from plant barks. Recently Singh[7,8] studied the effect of several bark extracts on the inactivation of Tobacco mosaic virus (TMV) and poptato virus X, and has shown the presence of inhibitors in the aqueous extracts of the barks. Tamura[10] reported the inhibitory activity of bark extracts of Japanese black pine—*Pinus thunbergii* on the infectivity of turnip mosaic virus.

The present study deals with the effect of the bark juices of nine trees belonging to different families on the infectivity of WMMVB, WMMM and WMMC strains of watermelon mosaic virus.

Standard inoculum of virus strains used in the present study were prepared by macerating young infected leaves of *Cucurbita pepo* L. cv. Caserta showing good symptoms. The crude juice was squeezed through layers of muslin cloth. Bark from different plants was collected separately. In each case 20 g of clean, fresh bark in the form of small pieces were homogenized with an equal volume of distilled water in a Waring Blender. Juices from these homogenates were expressed through a muslin cloth and were mixed with standard inoculum in 1 : 1 ratio. This mixture was then rubbed on healthy leaves of *Cucurbita pepo* L. cv. Caserta. Standard inoculum mixed with distilled water in 1 : 1 ratio was used as control. Five replicates were taken for each treatment. The results of inhibition of three strains of watermelon mosaic virus by bark extracts are given in Table I.

TABLE I

Effect of bark extracts of trees on the infectivity of three strain of watermelon mosaic virus

Species	Virus Strains	Number of plants infected out of 50 inoculated	Percentage of inhibition
Azadirachta indica L.	WMMVB	30	40
	WMMM	40	20
	WMMC	40	20
Callistemon lanceolatus D.C.	WMMVB	45	10
	WMMM	40	20
	WMMC	50	0
Eriobotrya japonica Lindle.	WMMVB	40	20
	WMMM	40	20
	WMMC	45	10
Ficus bengalensis L.	WMMVB	20	60
	WMMM	20	60
	WMMC	20	60
Ficus elastica Roxb.	WMMVB	10	80
	WMMM	10	80
	WMMC	20	60
Grewia asiatica L.	WMMVB	0	100
	WMMM	0	100
	WMMC	0	100
Prunus communis L.	WMMVB	40	20
	WMMM	40	20
	WMMC	40	20
Syzigium cumini D.C.	WMMVB	10	80
	WMMM	20	60
	WMMC	0	100
Tamarindus indica L.	WMMVB	10	80
	WMMM	20	60
	WMMC	10	80

Results in Table I indicate that bark extract of *Grewia asiatica* L. is most inhibitory to the infectivity of all three strains of watermelon mosaic virus. It is followed by extracts of *Syzigium cumini* D.C., *Tamarindus indica, Ficus etastica* Roxb., *Ficus bengalensis* L., reduced the infectivity by more than fifty per cent. *Azadirachta indida* L., *Prunus communis* L., *Eriobotrya japonica* Lindle, and *Callistemon lanceolatus* D.C., showed mild inhibitory activity.

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Department of Botany, J. P. TEWARI.
M.L.K. College,
Balrampur, Gonda, U.P.,
January 17, 1976.

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**Original not seen.

PACHYTENE CHROMOSOMES OF JUTE (*CORCHORUS CAPSULARIS*)

THE pachytene chromosomes of *Corchorus olitorius* were studied by Joshua, Thakare and Rao[1] and Paria and Basak[2]. These studies were found to agree, in general, on the morphology of the chromosome complement. The present study deals with the pachytene chromosomes of *C. capsularis* and attempts to find out whether the incompatibility between these species is associated with gross chromosomal differences.

Flower buds of *C. capsularis* var. JRC 412 were fixed in 1 : 3 acetic alcohol and slides were prepared following the methods employed for *C. olitorius*[1]. Microphotographs were taken at × 1,000 and the negatives were enlarged four times. The data on each chromosome are based on the measurements of 5 to 7 well-spread preparations.

The pachytene chromosomes of *C. capsularis*, although significantly longer (Table I) than those of *C. olitorius*[1], resemble those of the latter in many respects (Figs. 1, 2). The relatively shorter chromatic segments composed of conspicuous, deeply staining chromomeres flanking the centromeres and the long, achromatic distal segments are characteristic of both *C. olitorius*[1] and *C. capsularis*. All the chromosomes except chromosome 2 (nucleolar) and chromosome 3 have a median centromere. The nucleolar chromosome is the only one with a submedian centromere in both the species. The pattern of distribution of the chromomeres also seem to be similar, with *C. capsularis* having a few additional chromomeres. The average arm length ratio of the complement is 1·74 in *C. olitorius and* 2·10 in *C. capsularis*. The achromatic to chromatic ratio for the individual chromosomes is comparable to those of *C. olitorius*; the average ratio for the complement is 2·08 and 2·09 for *C. olitorius* and *C. capsularis* respectively. The ratio between the longest and the shortest chromosome of the complement in *C. capsularis* is 1·66 which is not significantly different from 1·55 of *C. olitorius*.

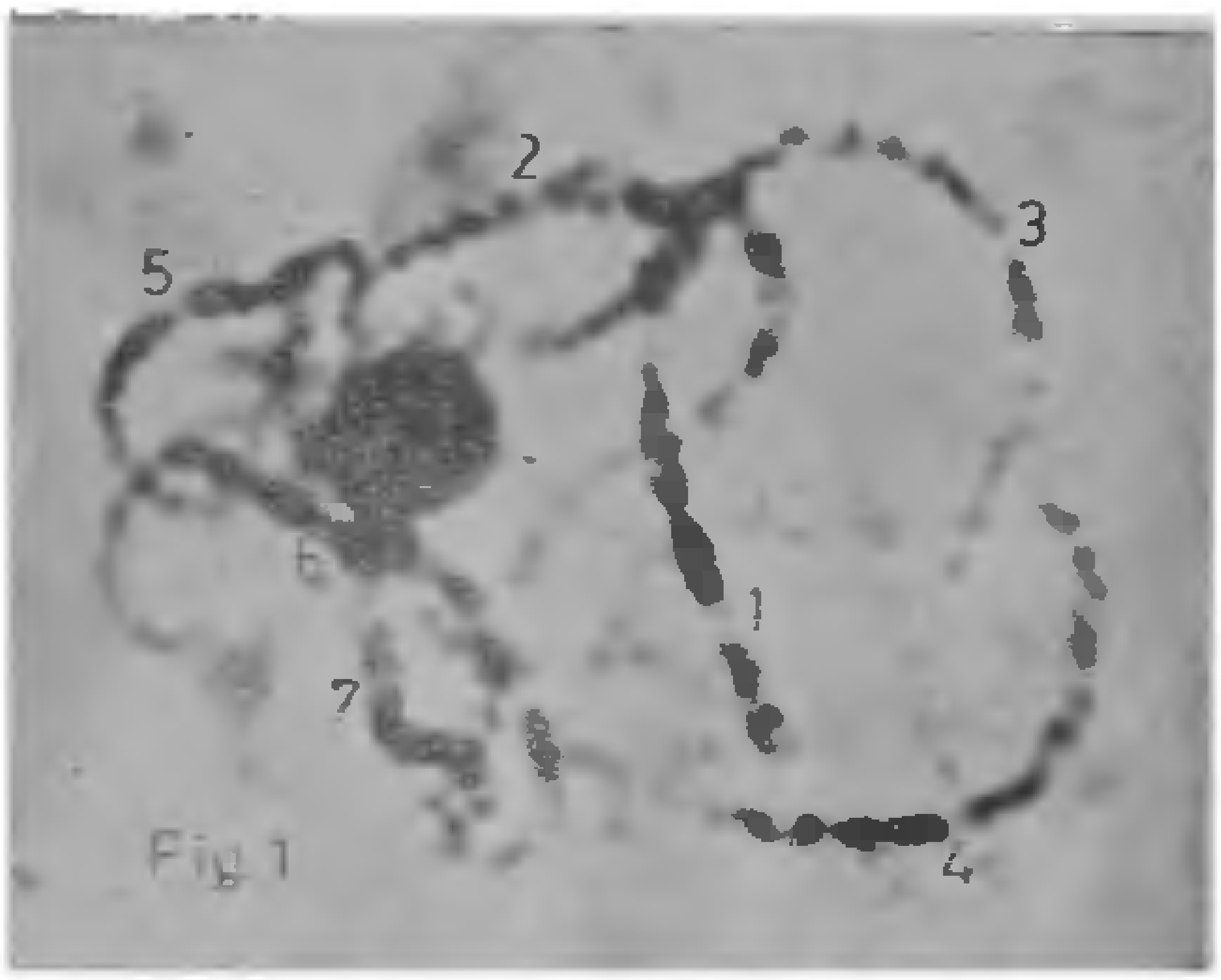

FIG. 1. Pachytene complement of *Corchorus capsularis.*

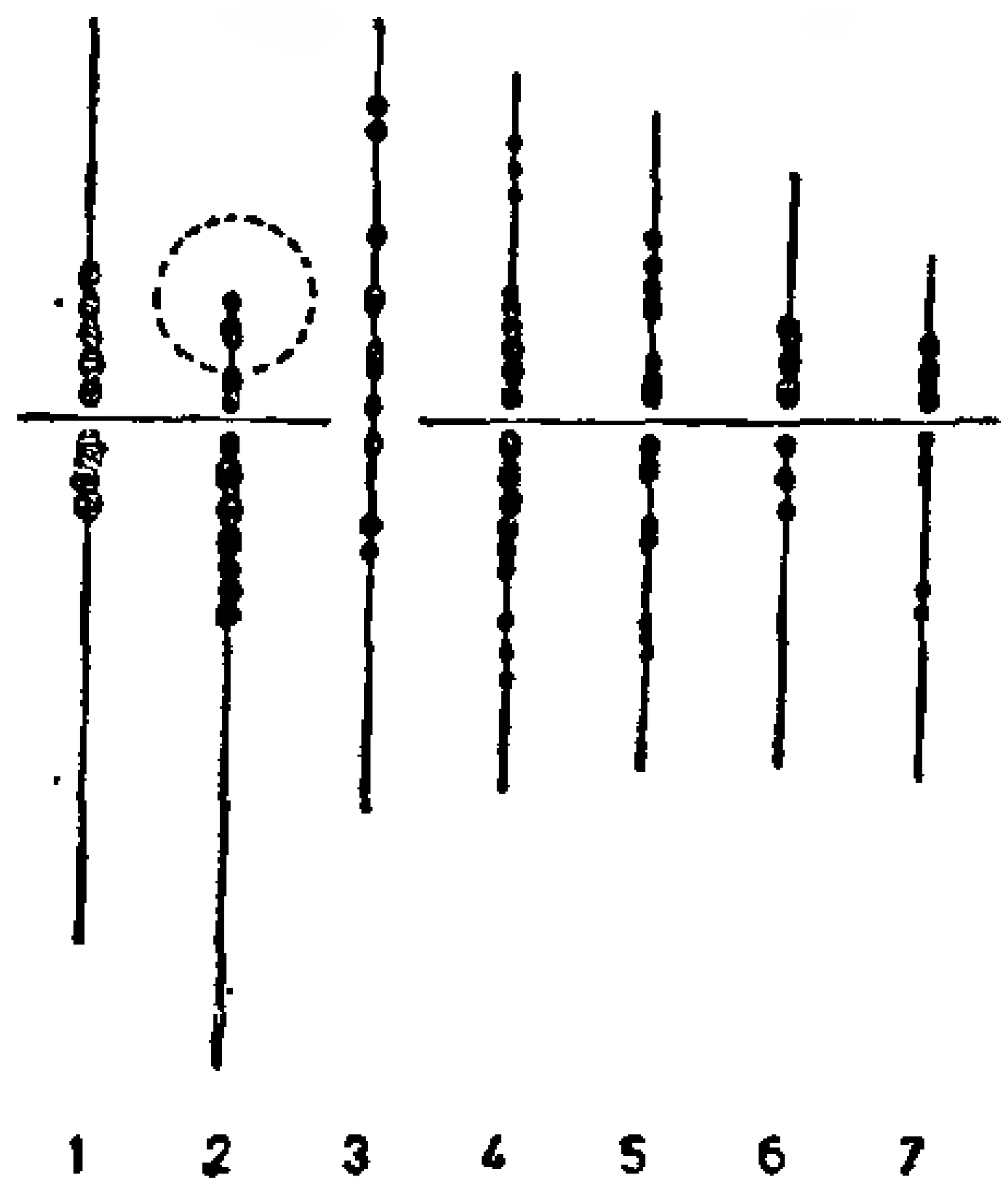

FIG. 2. Idiogram of pachytene chromosomes of *Corchorus capsularis.*

Despite these striking similarities between the pachytene complements of the two species, minor differences are observed when the chromosomes are studied individually. Some of the chromomeres in the achromatic regions are more prominent in