It is evident from the data that oidial germination and germ tube growth on the leaf of resistant cultivar was very little. Moderate resistant cultivars had poor germination and fungal growth. The susceptible cultivars had very high percentage of germination (30–60%) and high rate of germ tube formation.

Normally, field observations and technique for the artificial determination of reaction to obligate parasite, powdery mildew on linseed are time consuming and arduous. The technique discribed herein, will facilitate quick assay of linseed varieties to locate donors for resistance against the fungus, before the material comes to flowering stage.

Varieties with high HCN content such as EC 77959 and EC 1456 are resistant to powdery mildew. Whereas the susceptible varieties are poor in the HCN content.

The authors are grateful to Dr. Laxman Singh, Pulse Directorate, IARI, Kanpur, for extending necessary laboratory facilities.

March 28, 1980.

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A NOTE ON THE KARYOMORPHOLOGY OF *HIPTAGE BENGHALENSIS* (L.) KURZ.

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Hiptage benghalensis (L.) Kurz. (*H. madoblota* Geartn.) belonging to the family Malpighiaceae is a large straggling shrub and distributed throughout hotter parts of India. This species is chiefly grown in garden for its fragrant pretty white flowers. Its chromosome number was reported earlier as $2n = 58$ by Pal[1] and $2n = 42$ and 56 by Roy *et al.*[2]. Thus the chromosome numbers of this species reported so far do not agree with one another. Hence the present work was undertaken to determine the correct chromosome number and also to study their karyomorphology.

Material for the present study was collected from Lal Bagh, Bangalore and planted in the Botanical Garden of this University. Root tips from potted plants were pretreated with saturated solution of alpha bromonaphthaline for one and half hours and fixed in acetic alcohol (3 : 1) for overnight. Root tips were hydrolysed in 1 N HCl, stained in fuelgen and squashed in 45% acetic acid. The chromosome length and the type are given in Table 1.

Somatic complement of the species contained $2n = 58$ chromosomes (Figs. 1 and 2). This is in confirmation of previous report by Pal. Depending upon the size, the chromosomes were classified under following types :

Type A—Chromosomes more than 2·50 microns in length.

Type B—Chromosomes less than 2·50 microns and more than 2·00 microns in length.

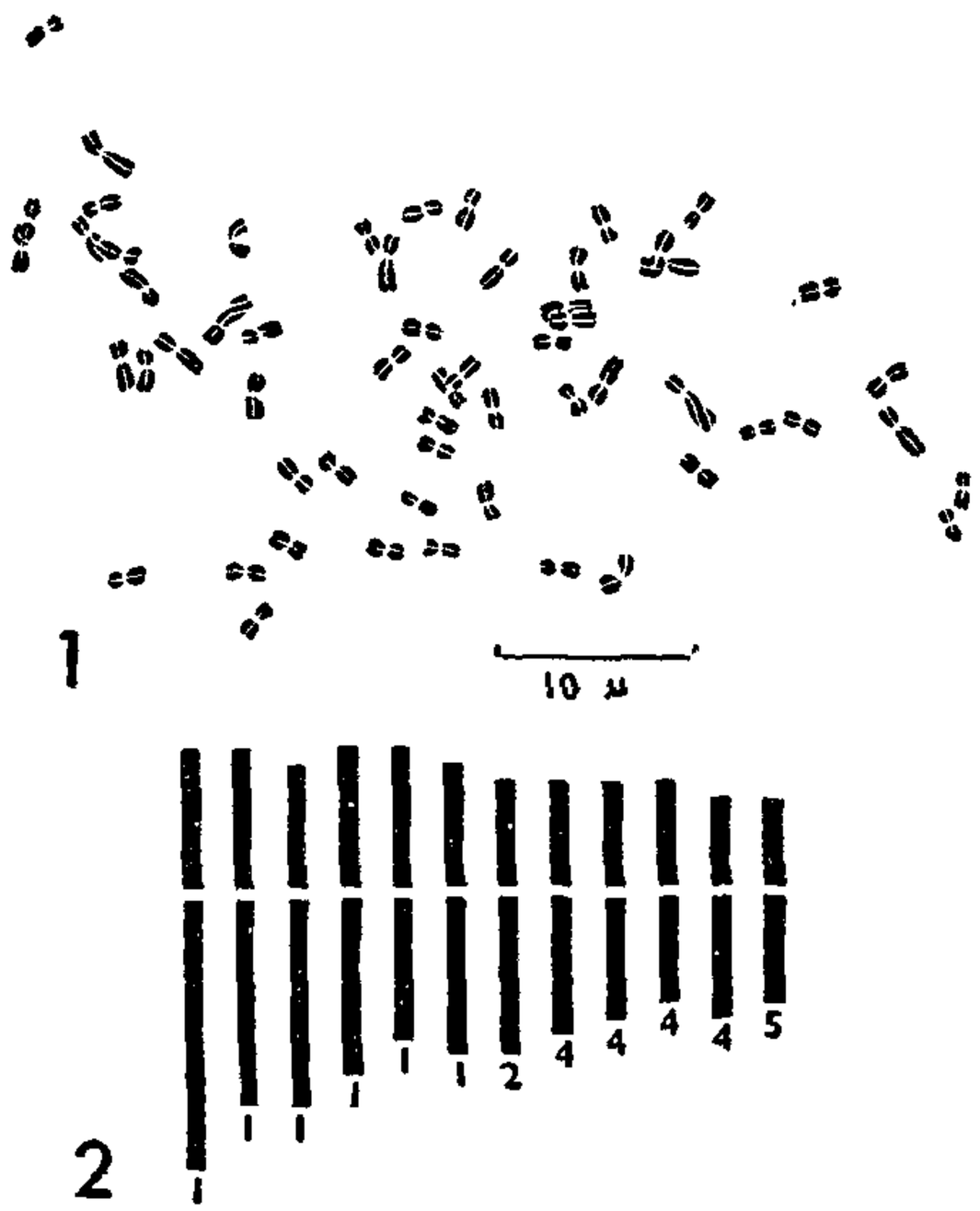
Type C—Chromosomes less than 2·00 microns and more than 1·50 microns in length.

Type A and Type B were considered as medium and Type C as small chromosomes. There were 12 pairs of medium and 17 pairs of small chromosomes. Among the medium chromosomes one pair of metacentric and eleven pairs of submetacentric were seen. There were four pairs of metacentric and thirteen pairs of submetacentric among small chromosmes and

TABLE I

Pairs*	Length in microns		Total length in microns	Type
	Long arm	Short arm		
I (1)	2·07	1·18	3·25	A (SM)
II (1)	1·76	1·18	2·94	A (SM)
III (1)	1·76	1·02	2·78	A (SM)
IV (1)	1·47	1·18	2·65	A (SM)
V (1)	1·18	1·18	2·36	B (M)
VI (1)	1·18	1·02	2·20	B (SM)
VII (2)	1·32	0·88	2·20	B (SM)
VIII (4)	1·18	0·88	2·06	B (SM)
IX (4)	1·02	0·88	1·90	C (SM)
X (4)	0·88	0·88	1·76	C (M)
XI (4)	1·02	0·74	1·76	C (SM)
XII (5)	0·88	0·74	1·62	C (SM)

* Figures in brackets in the first column represent number of similar pairs in each group.



FIGS. 1–2. Fig. 1. Somatic metaphase, × 2000. Fig. 2. Idiogram of an haploid complement. Numbers below idiogram represent pair/pairs under each category.

hence the karyotype is symmetrical. The karyotype formula determined is 8^{A} (SM) + 2^{B} (M) + 14^{B} (SM) + 8^{C} (M) + 26^{C} (SM).

May 1, 1981.

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PHYTOALEXIN PRODUCTION BY GERMINATING SEEDS OF *MUCUNA UTILIS*

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PHYTOALEXINS are antimicrobial substances produced by plants following infection and have a significant role in disease resistance[1]. Phytoalexin production by leguminous plants infected by fungi, bacteria and virus has been reviewed[2]. Ingham[3] claimed that the hypocotyls of *Mucuna deeringianum* inoculated with *Helminthosporium carbonum* produced cajanol along with genistein, 2-hydroxy genistein, dalbergioidin and isoferreirin.

The wild leguminous plant, *M. utilis* which is used by the tribals in southern Tamil Nadu as a source of protein, has attracted us for its disease resisting capacity. We report our results on the production of phytoalexins by germinating seeds of *M. utilis* inoculated with *Curvularia spicata.*

Seeds (35 g) soaked in water for 48 h were cut and inoculated with *C. spicata* spores (10^6 spores/ml). The seeds were completely covered with the fungus and became brown after 7 days of incubation at room temperature in a moist chamber. Seeds similarly incubated but not inoculated with fungal spores served as control. The seeds were immersed in 300 ml of 90% ethanol, homogenised in a blender at high speed for 2 min and filtered through Whatman No. 41 filter-paper. The extract was concentrated to 50 ml and extracted with equal volumes of ethyl acetate for 5 times. After flash evaporation, the residue was dissolved in 7 ml of ethanol. The crude etxract was streaked on tlc plate coated with silica gel G and developed in chloroform-ethanol (100-3 v/v) solvent. After spraying with diazotized *para*-nitroaniline reagent[4], 4 major bands designated as A, B, C, D were located.

In some experiments, the plates after air drying were sprayed with spore suspension of *C. spicata*[5] (10^6 spores/ml) and incubated in dark at 30 C for 3 days in a moist chamber. Inhibitory zones developed in two bands. In control, only one antifungal zone was present, which was not found in the treated one. The silica gel was scraped, eluted in ethanol, evaporated to dryness and the residue dissolved in 3 ml of 30% ethanol. Toxicity was assayed against spore germination of *C. spicata and H. oryzae in* cavity slides. Bands A and B completely inhibited the spore germination of *C. spicata* and *H. oryzae* whereas the bands C and D caused only 50 and 20% inhibition of spore germination, respectively.

The four bands were separately scraped and purified by further in tlc in benzene-ethyl acetate-methanol (25–8–4 v/v) solvent. Rf values, colour of the substances after reaction with dinitroaniline reagent and UV absorption maxima are listed in Table I.

The substance with Rf values of 0·09 (first solvent) and 0·58 (second solvent), coincided with authentic kievitone. The UV absorption maximum of kievitone in ethanol was at 293 nm and formed a reversible spectral shift in ethanolic NaOH to give an absorption maximum at 330 nm. The concentration of kievitone was estimated as 37·55 μg/g of seed material.

Clearly *M. utilis* inoculated with *C. spicata* produced a spectrum of phytoalexins and kievitone is the major phytoalexin. According to Ingham[3], cajanol and related substances accumulated in the hypocotyls