Table 1 *Mitotic index and types of spindle abnormalities (%) following MSN treatment.*

Types of abnormalities	Control	Concentrations in percentage			
		0.01	0 02	0 05	0.10
Mitotic index	22.5	19.2	17.8	13.7	9.3
Metaphase					
Scattering of chromosomes	1.2	4.7	11.8	24 2	28.8
Fragments	2 2	3 6	9.6	22.5	30 2
Disturbed cells	3 5	9 8	19 8	28 6	42 4
Anaphase					
Uneven distribution	0.8	1 0	2.2	6 8	16 4
Multipolar grouping	0.0	0 6	1.2	8.4	13.6
Bridges and laggards	1 2	3.8	8 4	14.3	19.8
Disturbed cells	2 4	9.4	20.6	40.4	56.8
Telophase					
Multinucleate cells	0.0	0.0	1 0	2.6	4.4
Bridges and laggards	0.0	0.0	0 8	1 4	3.8
Disturbed cells	1.8	6.8	18 4	36 6	48 4

methylated oxypurines and plant extracts are also known to inhibit cell wall formation[8,9].

The inhibiting action on mitosis indicated that DNA was affected by MSN. It is interesting to note that the structurally modified DNA was isolated from cells treated with nalidixic acid which belongs to the group of 1,8-naphthyridines. These findings suggest that MSN may possibly be a mitotic poison with radiomimetic action.

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A POST PACHYTENE DIFFUSE STAGE IN *ALYSICARPUS RUGOSUS* DC

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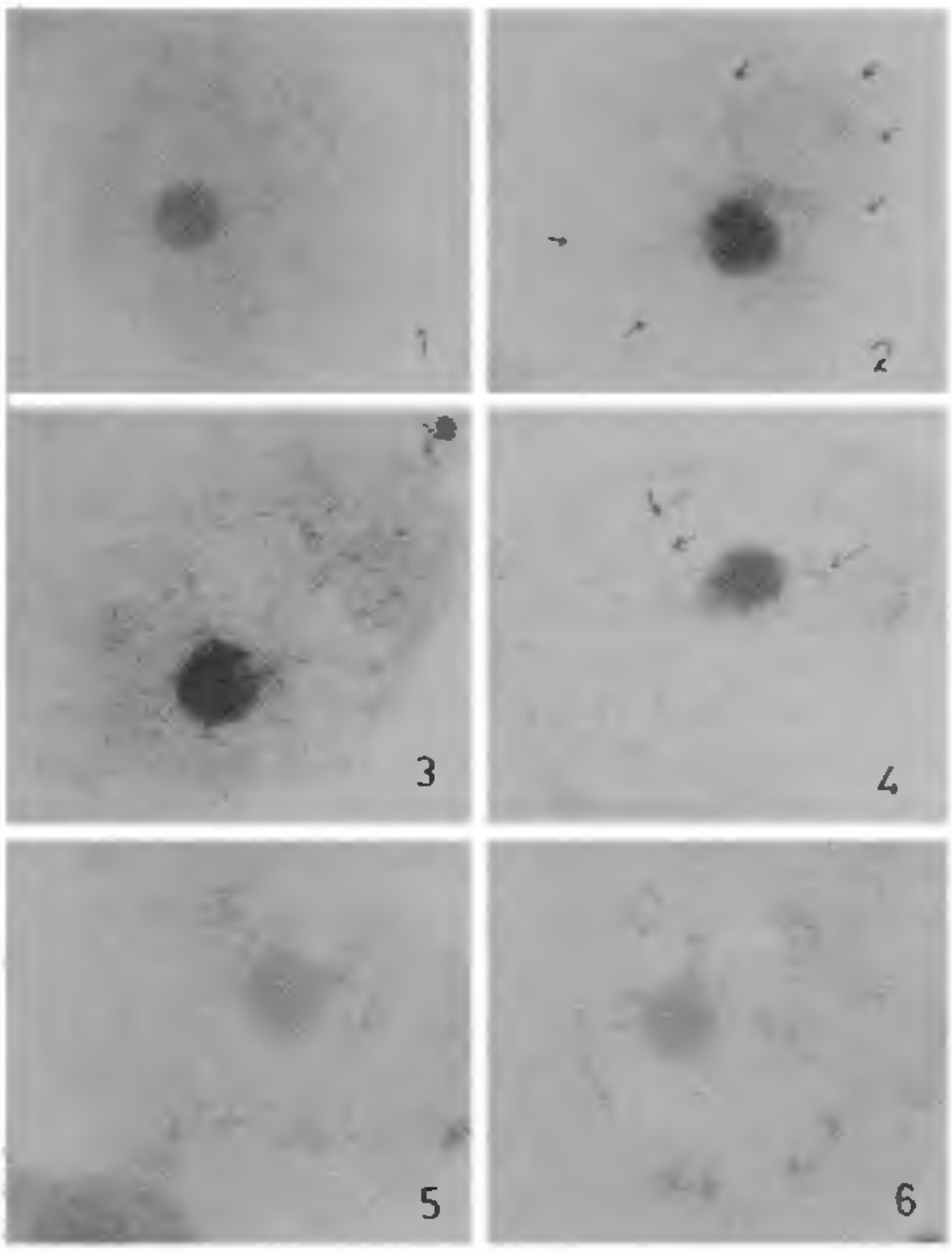
THE accepted outline of meiotic prophase-I involves progressive condensation from early prophase to diakinesis. However a post pachytene diffuse stage has been reported in many higher plants such as *Lycopersicon esculentum, Zea mays* and *Pisum sativum*. Post pachytene diffuse stage has earlier been studied in detail[1–4]. In some of the reports the exact stages of differenciation have been based on correlating the diffuse stage with anther development. The present report deals with the observations on meiotic prophase-I of *A. rugosus* DC where the chromosomes undergo a post pachytene despiralization.

Young flower buds were fixed in 1 : 3 acetic alcohol and stored in 70% alcohol at 4°C. Squash preparations were made in 2% acetocarmine.

In *A. rugosus* DC earlier prophase stages upto pachytene (figure 1) are normal. The pachytene chromatin however, undergoes decondensation, first at certain regions (figure 2) and later the whole chromatin mass is seen as diffuse and appears fuzzy (figure 3). The frequent appearance of diffuse stage suggests a fairly long duration of this condition. The post pachytene nature of the diffuse stage is supported by



Figures 1–6. Stages of meiosis from pachytene to diakinesis in *Alysicarpus rugosus* DC. (× 2000 for 1, 3, 4, 5, 6 & 2400 × for 2). **1.** Pachytene, **2.** Late pachytene with initiation of diffusion, arrow marks show the sites of diffusion, **3.** Diffuse stage, **4.** Pollen mother cell in post diffusion condensation, arrow marks show bivalents with diplotene degree of condensation, **5.** Early diakinesis showing bivalents with end regions uncondensed, **6.** Normal diakinesis.

configurations (figure 3) showing the absence of regular network and the presence of some extremely thin chromatin strands with no relationship between thick and thin strands readily discernable. The appearance is thus quite different from normal leptotene-zygotene stages where one finds regular network with paired regions showing thicker strands and the adjoining regions with thinner strands. After the diffuse stage the chromatin strands recondense and diplotene loop-like appearances appear in some of the bivalents (figure 4); and the process seems to be asynchronous. Moreover, certain regions appear more condensed. By early diakinesis, the end regions of the bivalents are still relatively uncondensed (figure 5), followed by further condensation of the end regions resulting in normal diakinesis (figure 6) where eight distinct bivalents are seen. A synthetic stage (lampbrush stage) was earlier reported as diffuse stage. It is possible that diffuse stage in plants also represents a synthetic stage. This aspect is being investigated.

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KARYOMORPHOLOGICAL STUDY ON EIGHT CULTIVARS OF HIGH YIELDING RICE (*ORYZA SATIVA* L) FROM PACHYTENE

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SOMATIC chromosomes have been studied earlier[1] and pachytene analysis in a single strain of rice (*Oryza sativa* L) has also been carried out[2]. However pachytene analysis has not been attempted on high yielding cultivars of rice. In the present study, twelve pachytene bivalents of eight rice cultivars were identified following the criteria established for *Zea* by McClintock[3] to understand the intervarietal differences.

Young spikelets of suitable stages were fixed in propionic-alcohol (1 : 2) to which trace of ferric acetate was added at the temperature range 20°C to 35°C for 24 hr after which the materials were transferred to 70% ethyl alcohol for storage. Before smearing, suitable flower buds were kept in 45% propionic acid for 10 min and the anthers were dissected out and smeared with a drop of 1% propionic carmine. Gentle pressing and alternate warming and cooling favoured excellent spreading and differentiation of the pachytene bivalents in the sporocytes. In most of the cells only 4 to 6 bivalents could be traced from end to end; in 10 spore mother cells, however, all the twelve bivalents could be analysed. Figures were taken from