

T. P. SINGH.

Cytogenetics Laboratory,
Department of Botany,
University of Calcutta,
Calcutta 700 019, May 23, 1978.

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GENETIC CONTROL OF ARTIFICIALLY INDUCED DESYNAPSIS IN JUTE (CORCHORUS OLITORIUS L.)

FOLLOWING the analysis in maize^{2,3} both naturally occurring and radiation induced genetically controlled, desynapsis or inability to retain pachytene pairing upto metaphase I stage, have been reported in many plant species. Mitra and Singh⁵ reported naturally occurring asynapsis in *C. olitorius*. The nature of its genetic control is not known. Hence an attempt has been made to examine the nature of inheritance of artificially induced desynapsis in *C. olitorius*.

Seeds of JRO 632 were treated with 0.5% E.M.S. followed by 20 Kr. X-ray. In M₂ generation a few highly sterile, very late maturing plants with very small pods were isolated. On cytological examination by the technique of Basak and Biswas¹, they were found to be desynaptic ones (Fig. 1). Desynaptic plants thus identified were crossed to cytologically normal variety, JRO 632, and the F₂'s from the resulting hybrids were examined for the segregation of desynapsis.

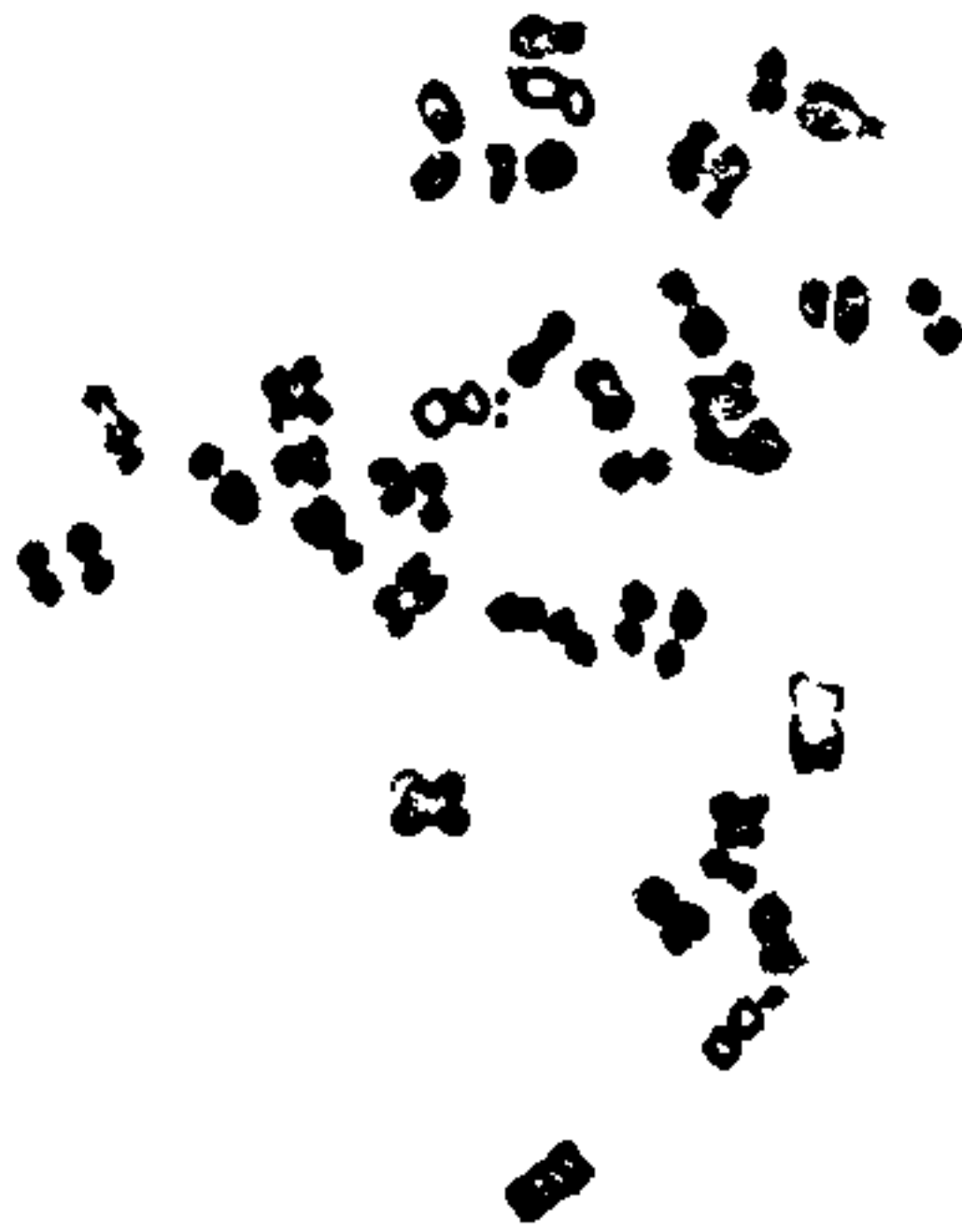


FIG. 1. A PMC at diakinesis showing 14 univalents.

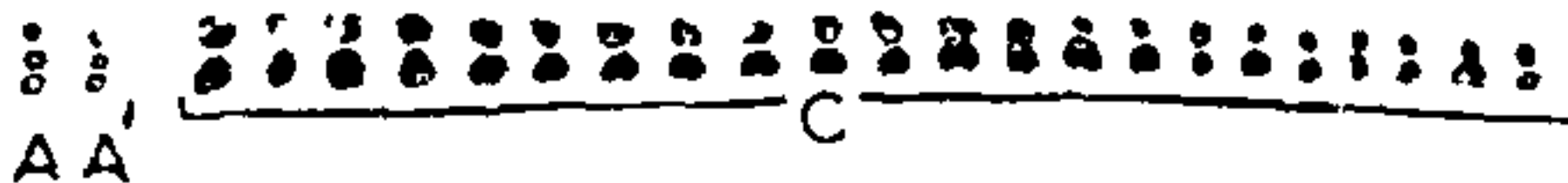
Normal pairing of chromosomes was observed in F₁'s and hence normal pairing was found to be dominant over desynapsis. A total of 588 F₂ plants pooled from 11 families (Table I), examined cytologically



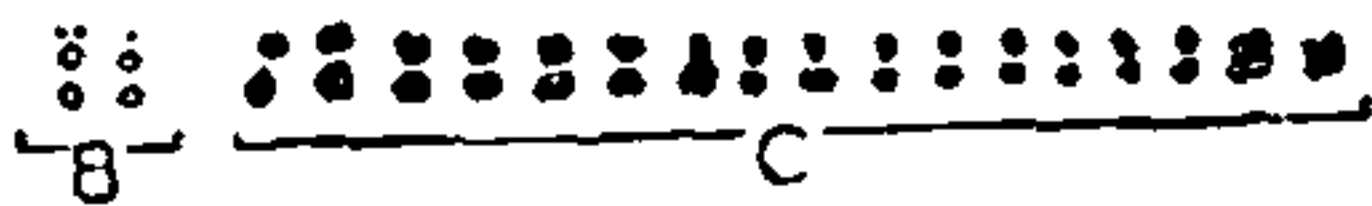
O. carnosum Link. et Otto.



O. viride Willd.



O. carnosum Link. et Otto



O. viride Willd.

importance of these species, it is worthwhile to work out the change of chemical content, if any, associated with the change in the genetic constitution.

The author is grateful to Professor A. K. Sharma, Ghosh Professor and Head of the Department of Botany, University of Calcutta, for valuable guidance and facilities. He is also thankful to the Council of Scientific and Industrial Research for the award of the fellowship.

TABLE I
Segregation of desynapsis in F_2 families

Family	Normal	Desynapsis	Expected ratio	χ^2	P
1	42	13	3:1	0.0545	.80-.90
2	45	14	3:1	0.0508	.80-.90
3	59	18	3:1	0.1082	.70-.80
4	51	16	3:1	0.0447	.80-.90
5	47	17	3:1	0.0833	.70-.80
6	37	14	3:1	0.1633	.50-.70
7	41	12	3:1	0.1572	.50-.70
8	33	9	3:1	0.2857	.50-.70
9	26	8	3:1	0.0392	.80-.90
10	21	8	3:1	0.1034	.70-.80
11	47	10	3:1	1.6900	.10-.20
Total Heterogeneity	449	139	3:1	0.5804	.30-.50
				2.8381	.98-.99

were found to segregate into 449 normal pairing: 139 desynapsis. The segregation showed a good fit to the expected ratio of 3 normal pairing: 1 desynapsis ($\chi^2_1 df = 0.5804$; $P = 0.30-0.50$). The segregation of F_2 's suggests the monogenic control of desynapsis. The mutant locus controlling the pairing of chromosomes at meiosis of *C. olitorius* is a new one and hence the gene symbols proposed for the pair of alleles are *Ds* (normal pairing) and *ds* (desynapsis).

Genetically controlled desynapsis described above has led to the production of a considerable amount of aneuploid gametes due to anomalous distribution of univalents during anaphase I. Thus the progenies of desynaptic plants in *C. olitorius* could be utilised effectively as a useful source of different types of aneuploids including the primary trisomics and/or monosomics as has been demonstrated in *Nicotiana*⁴.

Jute Agricultural Research
Institute, Barrackpore,
West Bengal,
May 23, 1978.

P. PARIJA.
M. S. BASU.
S. CHATTOPADHAYA.
S. L. BASAK.

IDIUBLASTS TYPOLOGY ON THE TAXONOMY OF *CAPPARIS SPINOSA* COMPLEX

This study illustrates both usefulness and limitations of the data on idioblats typology in taxonomic studies. Furthermore, they emphasize the importance of idioblats, especially sclereids and tracheoids in understanding taxonomic problems. Some of the interesting data on *Capparis spinosa* and its allies have been investigated in a detailed manner.

Capparis spinosa L. is a species complex with a wide range distribution from Mediterranean to Australia. The existence of morphological variations with many intergrading forms has led in the past as well as in the present to recognise as many varieties as possible leading to rather an unsatisfactory working classification¹⁻³. Recently⁴ an attempt has been made anatomically to throw some light on the taxonomic status of 4 taxa under this species complex.

As indicated in Table I the clear laminae of this species complex exhibit vein-endings with idioblats of two categories, namely tracheoids and sclereids. Tracheoids are in the form of Brachytracheoids or Sclerotracheoids⁵ and sclereids of the monomorphic grouping⁶ showing spheroidal or lobed vesiculose base forms at the vein-endings. These features seem to be quite constant and characterise within the species complex. This is illustrated as follows:

C. cartilaginea Decne. regarded by Jacobs² as a variety of *C. spinosa* L. but considered as an independent species in a recently published flora⁷ and anatomically supported by Bokhari and Hedge⁴.

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4. Goodspeed, T. H. and Avery, P., *J. Genet.*, 1939, 33, 382.
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