germination of pollen grains and length of pollen tubes in the various treatments. The results show that in both control and the three Tween 80 concentrations, pollen germination was 100%. The latter considerably hastened the rate of pollen tube growth in the first 2 hr. Triton X-114 caused a slight delay in pollen germinaton at 10 ppm and drastically reduced both pollen germination and pollen tube growth at 100 ppm and totally inhibited pollen germination at 200 ppm. In control as well as in all the treatments in which pollen germination occurred, the pollen tubes were normal, the generative nucleus entered the tubes in which length exceeded 150 μ, but the division of the generative cell was not initiated.

The mechanism of the biological action of surfactants is not clearly understood. Many hypotheses have been put forward to explain the promotory and the inhibitory effects of the sufactants[1-4]. The pollen germination system can be used for elucidating the mechanism of action of surfactants because it is simple to set up, is easy to handle and is of short duration.

I thank Professor B. M. Johri for facilities and Professor H.Y. Mohan Ram for going through the manuscript.

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TERTIARY TRISOMIC IN *TRIGONELLA CORNICULATA*

SPONTANEOUS triploids in *Trigonella corniculata* L. ($2n = 16$), known as 'Kasuri Methi' in India, has been reported by Singh and Saini[1]. Out of 60 seeds produced by one triploid, 34 germinated; seventeen of them were found to be primary trisomics, one tertiary trisomic, one double trisomic and one triploid. The remaining 14 plants were diploid. The second triploid produced 30 seeds out of which 13 germinated and all were diploid.

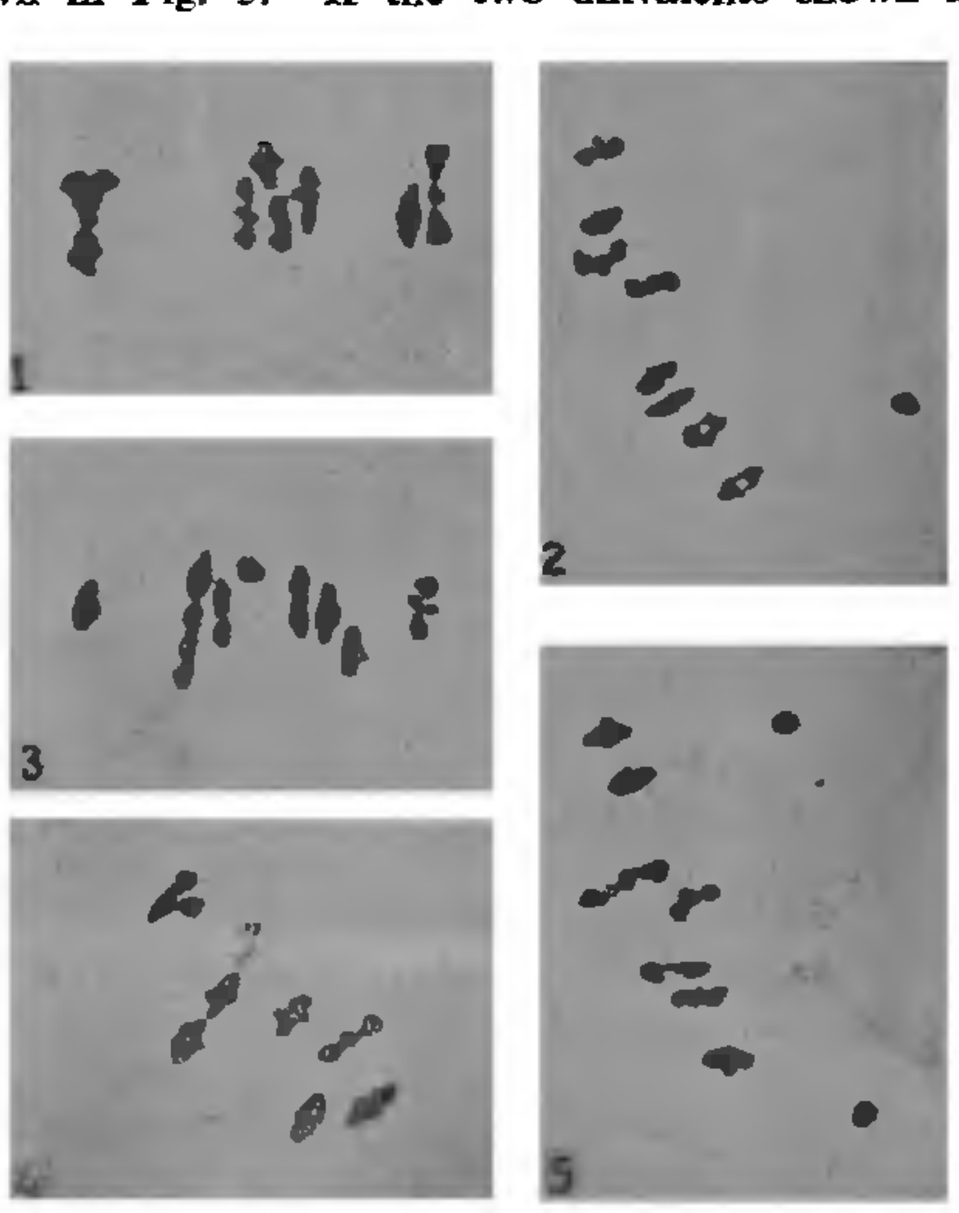
Ninety-six cells were studied at metaphase I of the tertiary trisomic which had $2n = 17$. The typical pentavalent (⊂—⊂) formed by tertiary trisomics[2] is shown in Fig. 1. The most frequent configuration was $8_{II} + 1_{I}$ (Fig. 2) though $1_{IV} + 6_{II} + 1_{I}$ (Fig. 3) and $1_{III} + 7_{II}$ (Fig. 4) were also observed, the later being the next most frequent configuration. The associations of chromosomes at metaphase I are shown in Table I. Rarity

TABLE I

Different chromosomal associations at metaphase I of the tertiary trisonic and chiasma frequency in the diploid and the tertiary trisomic of T. corniculata

Configuration	No. of cells	Per cent of cells	Mean Xta/cell in: Diploid	Mean Xta/cell in: Tertiary trisomic
$1_{V}+6_{II}$	4	4·17		
$1_{IV}+6_{II}+1_{I}$	2	2·08		
$1_{III}+7_{II}$	36	37·50		
$1_{III}+6_{II}+2_{I}$	1	1·04	14·3±0·65	12·5±0·45
$8_{II}+1_{I}$	45	46·87		
$7_{II}+3_{I}$	8	8·34		

of pentavalent at metaphase I is due to terminalization or non-formation of chiasmata[3]. However, an association of five chromosomes may be quite frequent at diplotene and diakinesis but poor staining and inconsistency of the nucleolar number rendered the study at these stages difficult in this material. Chiasma frequency in the tertiary trisomic is lower than that of the diploid (Table I). An uncommon configuration of $1_{III} + 6_{II} + 2_{I}$ is shown in Fig. 5. If the two univalents shown in this cell go to one pole and the resultant gametes are able to take part in fertilization, primary triso-



FIGS. 1–5. Meiosis in the tertiary trisomic in *T. corniculata*, × 1,200. Fig. 1. Metaphase I with $1_{V} + 6_{II}$. Fig. 2. Metaphase I with $8_{II}+1_{I}$. Fig. 3. Metaphase I with $1_{IV} + 6_{II} + 1_{I}$. Fig. 4. Metaphase I with $1_{III} + 7_{II}$. Fig. 5. Metaphase I with $1_{III} + 6_{II} + 2_{II}$.

mics with an extra chromosome other than that involved in the tertiary trisomic, are likely to be found in the progeny of this plant. This also suggests how the extra chromosome may affect the chiasma formation and terminalization in other chromosomes and thus bring about a 'univalent shift'.

The triploid which produced tertiary trisomic showed unusual configurations at metaphase I which were explained by assuming it to be a translocation-heterozygote[1] because it was found in the population raised from gamma-irradiated seeds. The tertiary trisomic found in its progeny validates the assumption made by Singh and Saini[1]. One of the diploids produced by this triploid showed a ring of four chromosomes at metaphase I which also confirms that the triploid was a translocation-heterozygote. The second triploid, which showed the usual configurations of trivalents, bivalents and univalents at metaphase I, produced only diploids in its progeny. It may be inferred that structural heterozygosity is a good source of trisomics in *T. corniculata*. Trisomics from translocation heterozygotes have also been reported in barley by Das and Goswami[4] and many other workers.

Our thanks are due to Dr. J. L. Minocha for his interest in the work. Financial assistance by the Indian National Science Academy is gratefully acknowledged.

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A NOTE ON A_{111}—A pH INDICATOR ANTIBIOTIC

DURING the course of a search for antibiotic-producing microorganisms from soil, the authors have been able to isolate a strain of *Streptomyces* sp. designated as Ac_{111} which showed marked antimicrobial properties specially against human pathogenic bacteria.

The active material was produced in Czapek's liquid medium[1] at 28° C in stationary flasks and the broth was harvested on the 8th day of incubation. A_{111} was extracted from the culture filtrate with *n*-butanol. It was purified by drying the butanol extract *in vacuo*, dissolving in methanol and precipitating with 1N HCl. The antibiotic was purified further over a column of silica gel using acetone-ethanol (1 : 1) as the eluting agent. A_{111} was obtained as a light brown, amorphous powder.

The antimicrobial spectrum of A_{111} as determined by the agar cup method of assay, is presented in Table I. The substance was found to be homogeneous as evidenced by paper electrophoresis

TABLE I

Antimicrobial activity of A_{111} as determined by the agar cup method of assay

Test organism		Minimum inhibitory concentration (μg/ml)
Staphylococcus aureus	..	9
Escheichia coli	..	9
Vibrio cholerae	..	10
Proteus vulgaris	..	10
Aerobacter aerogenes	..	9
Streptococcus pyogenes	..	6
S. faecalis	..	6
Klebsiella pneumoniae	..	6
Bacillus subtilis	..	9
B. anthracis	..	9
B. cereus	..	10
B. megaterium	..	10
Salmonella typhosa	..	9
Brucella abortus	..	10

paper and thin layer chromatography studies. It was soluble in methanol, ethanol, *n*-butanol and *n*-propanol, and insoluble in water, heptane, petroleum ether and carbon tetrachloride. Its m.p. was 98–100° C (decomposition) and optical rotation $[\alpha]_D^{27.5} = +328$ (C = 0·01% in methanol). Ultraviolet absorption spectrum in methanol showed maximum at 219 mμ with a shoulder at 267 mμ. Microanalytical data showed C—59·03%; H—7·39%; N—1·82%; S—3·69%; Cl—6·61% and O—21·46% (by difference). A_{111} is a pH indicator, turning yellow in acidic and violet in alkaline solutions. Literature was surveyed to determine the identity of A_{111} and it was found that it could be compared only with the nitrogen containing antibiotics having pH indicator properties such as viomycin[2], luteomycin[3], mycorhodin[4], latercomycin[5], rhodomycin[6], rhodomycetin[7] and streptovaricin[8]. A_{111} differed from these antibiotics in its physico-chemical properties, specially in containing sulphur.

Our thanks are due to Drs. S. M. Sircar and P. Nandi for their kind help and interest in our investigation.