the diploid members of *S. nigrum* complex have not
directly contributed to the evolution of natural tetra-
ploid *S. nigrum*.¹-⁴

A comparative morphological study of induced
tetraploids from *S. nodiflorum* and *S. americanum*
revealed that, although close similarity was observed
regarding pollen fertility and seed set at diploid level,
marked differences were observed at tetraploid level.
The tetraploid produced from *S. nodiflorum* was highly
fertile (89.87%) with 6 to 55 seeds per fruit whereas
that produced from *S. americanum* was highly sterile
(62%) with 0 to 4 seeds per fruit. The seeds were
larger in size and homogeneous in the former while
in the latter the seeds were grouped into three classes
—large, medium and small. This is perhaps due to
their different chromosome numbers. The progeny
of tetraploid *S. nodiflorum* did not exhibit either
morphological or cytological variation.

Seventy-five seeds were obtained from tetraploid
of *S. americanum* and sown. Of these, only four
germinated, two died in the seedling stage and only
two plants survived and grew to maturity. Cyto-
logical study of these plants revealed that these plants
were not tetraploid as expected but proved to be tri-
ploids with chromosome number 2n = 36.

Recovery of only triploid plants from autotetra-
ploids may be due to some genetic factor(s) which
favours the rather rare gametic combination of 24 +
12 to survive successfully, while all other combina-
tions are eliminated. The unequal separation of chro-
osomes, at anaphase I, in the pollen mother cells, which
was seen in considerable frequency (68.15%) in the
induced tetraploids might have given a few haploid
gametes, which on fusion with normal diploid gametes
resulted in triploid plants. Meiosis in triploid plants
was characterized by a high frequency of trivalents
at both diakinesis and metaphase I as expected in an
autotriploid.

One of the two triploid plants was damaged acci-
dentally and died before the fruiting stage. The other
triploid plant was left for open pollination to observe
the seed setting. Fertility was very poor in the tri-
ploid (14.03%). However, it resulted in developing
25 seeds which on germination gave rise to aneuploids
with 25 and 26 chromosomes, as expected from an
autotriploid. This could be possible because of
random assortments of trivalent chromosomes, at
anaphase I in the autotriploid, which range from 12
to 24. Meiosis in these aneuploids revealed that the
25-chromosome plant was a primary trisomic whereas
the plant with 26 chromosomes was a double trisomic.
Details will be published elsewhere.

June 4, 1980.

1945, p. 77.

20, 524.

Mag.,* 1971, 84, 335.


**HETEROCHROMATIN IN THE FIRST INBRED
GENERATION OF RADISH (RAPHANUS
SATIVUS L.)**

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Chromocentres, which represent constitutive hetero-
chromatin, are observed in the interphase nuclei of
many plant species as dark staining heteropycnocytic
bodies.¹-⁴ They roughly correspond to the centromeric
regions of prophase chromosomes. Radish is a
suitable material for studying constitutive hetero-
chromatin, for, its cells exhibit chromocentres in the
interphase nuclei. Studies of chromocentres in inbred
plants, of an allogamous population like radish may
aid in understanding the genetics of heterochromatin.
The present study has been undertaken to see the effect
of inbreeding on the number and distribution of
chromocentres in plants of the first inbred generation
in radish.

Plants belonging to three families of the first inbred
generation (F₁), namely *P₁*, *P₂* and *P₃*, and the varietal
population 'Pusa Desi' constituted the material for
the present study. Plants of the population on selfing
showed a marked decline in fertility and vigour
(unpublished). Methods for cytological analysis were
the same as used earlier.²-⁴

Inbreeding had a marked effect on the number and
distribution of chromocentres. Mean number of
chromocentres in the inbred families was noticeably
higher than that in the population (Table 1). *P₁*
differed significantly from the population in this
parameter (*P > 0.05*). However, there was no
significant difference among the inbred families in the
mean number of chromocentres. The distribution of
chromocentres in the inbred families also showed a
wider range than that in the population. The number
of chromocentres per nucleus ranged from 11 to 18
in all the forms but the majority of nuclei had 13 to
15 chromocentres. Interestingly, nuclei having 17–18
chromocentres were more frequent in the inbred
families. Besides, plants of the inbred families showed
segregation for the mean number of chromocentres.
They had both lower and higher number of chromo-
centres per nucleus than those of the population, from
which they were derived.
<table>
<thead>
<tr>
<th>Materials</th>
<th>No. of chromocentres per nucleus in plants</th>
<th>Mean ± S.E.</th>
<th>CV (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Population</td>
<td>13·65</td>
<td>13·20</td>
<td>13·25</td>
</tr>
<tr>
<td>P₁</td>
<td>13·85</td>
<td>14·00</td>
<td>14·50</td>
</tr>
<tr>
<td>P₂</td>
<td>14·53</td>
<td>14·10</td>
<td>14·30</td>
</tr>
<tr>
<td>P₈</td>
<td>13·85</td>
<td>13·70</td>
<td>14·55</td>
</tr>
</tbody>
</table>

* Based on 20 nuclei per plant.
** Significant at 5% level.

Forced inbreeding of an allogamous and heterozygous population like radish leads to homozygosity at various loci. It was shown earlier that the mean number of chromocentres is under the control of the genotype. It is related to homo- and heterozygosity, homozygotes having a higher mean than heterozygotes. Hadlaczky and Kalman also held a similar view. Our study indicates that inbreeding directly affects the amount and distribution of constitutive heterochromatin as inferred from chromocentre counts. Besides, the segregation pattern of chromocentres points out that heterochromatin phenotype in radish, like chiasma frequency, is also under genic control.

Authors are thankful to Professor J. P. Sinha for providing necessary laboratory facilities.

June 6, 1980.


**DEVELOPMENT AND STRUCTURE OF RESORPTION TISSUE IN CAPSICUM L.**

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The resorption tissue has been reported in anthers of *Capsicum annuum* L. and *C. chinense* Jacq. (E. C. No. 89028 normal and aberrant), *C. frutescens* L. (E. C. No. 86949), *C. frutescens* var. tabasco, *C. microcarpus* Cav. and Desc. (E. C. No. 86952), *C. pendulum* Willd. (E. C. No. 86935), and *C. protractissum* Heiser and Smith (E. C. No. 86928) were obtained through the courtesy of Dr. W. R. Lengford, Southern Regional Plant Introduction Station Experiment, Georgia, U.S.A. and those of *C. nigrum* Willd. from the Botanical Garden, Washington State University, Seattle, U.S.A. The plants were raised in the garden of the Botanical Department. The flower buds of different sizes were selected from three plants of each species for the present study. Sections were cut at 8-10 μ and stained with safranin-fast green following usual microtome techniques.

The anthers dehisce longitudinally and it takes place by the organisation of a characteristic resorption tissue in the hypodermal region of the septum (Figs. 1A, B, H-P). The hypodermal cells enlarge radially and become distinct due to their dense and granular con-