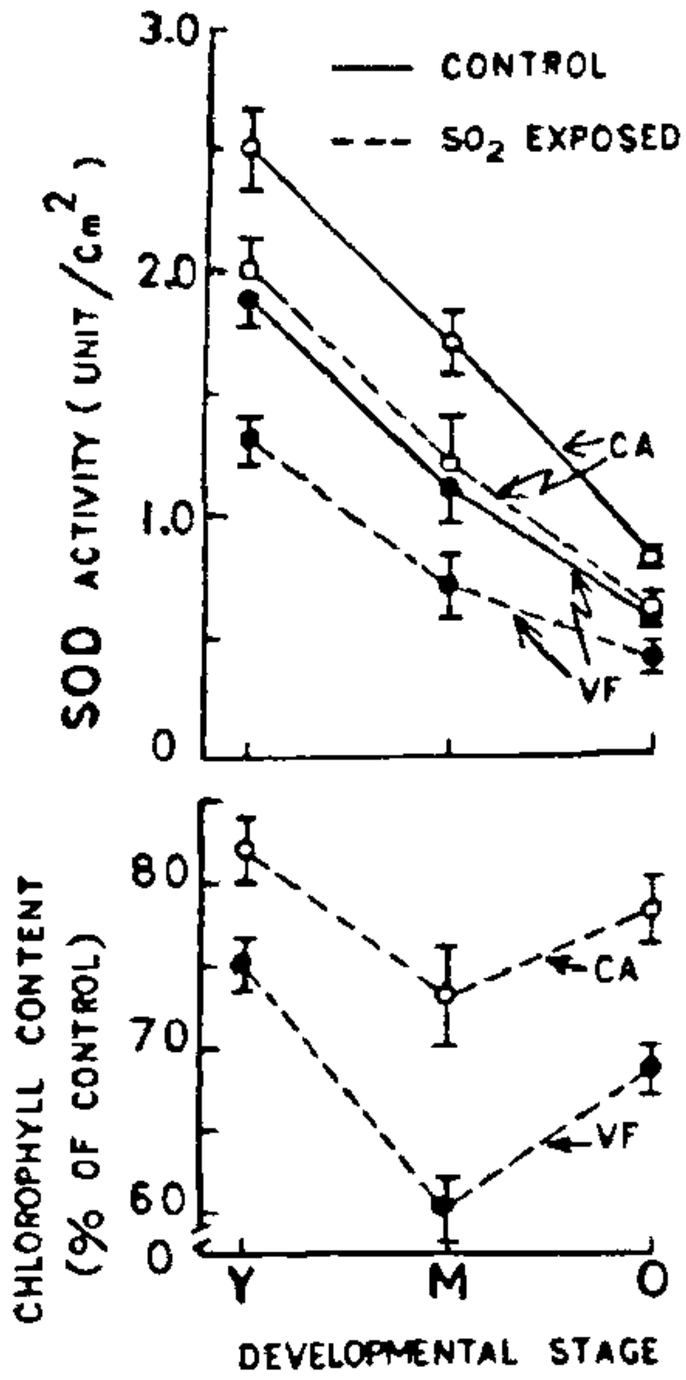

Figure 1. Effects of SO_2 on SOD activity and chlorophyll contents of *Cicer arietinum* (CA) and *Vicia faba* (VF) leaves at different stages of development (Y = young, M = mature, O = old). Values are mean of 5 separate observations. Bars represent ±SD.

with ageing as well as due to SO_2-treatment. The impact of such changes was much pronounced in broad bean in which the O_2^- induced destruction of chlorophyll pigments were higher than that in gram plants, suggesting higher SO_2 tolerance of gram plants in comparison to broad bean (figure 1).

Thus, the present study provides a biochemical basis for differential SO_2 sensitivity of leaves of different ages, which reveal that susceptibility of plants to SO_2 depends greatly upon their O_2^- scavenging capacity and that plants with higher SOD activity vis-a-vis less inactivation of their SOD are tolerant.

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COLCHICINE-INDUCED TETRAPLOIDS IN CARDAMOM (*ELETTARIA CARDAMOMUM* MATON)

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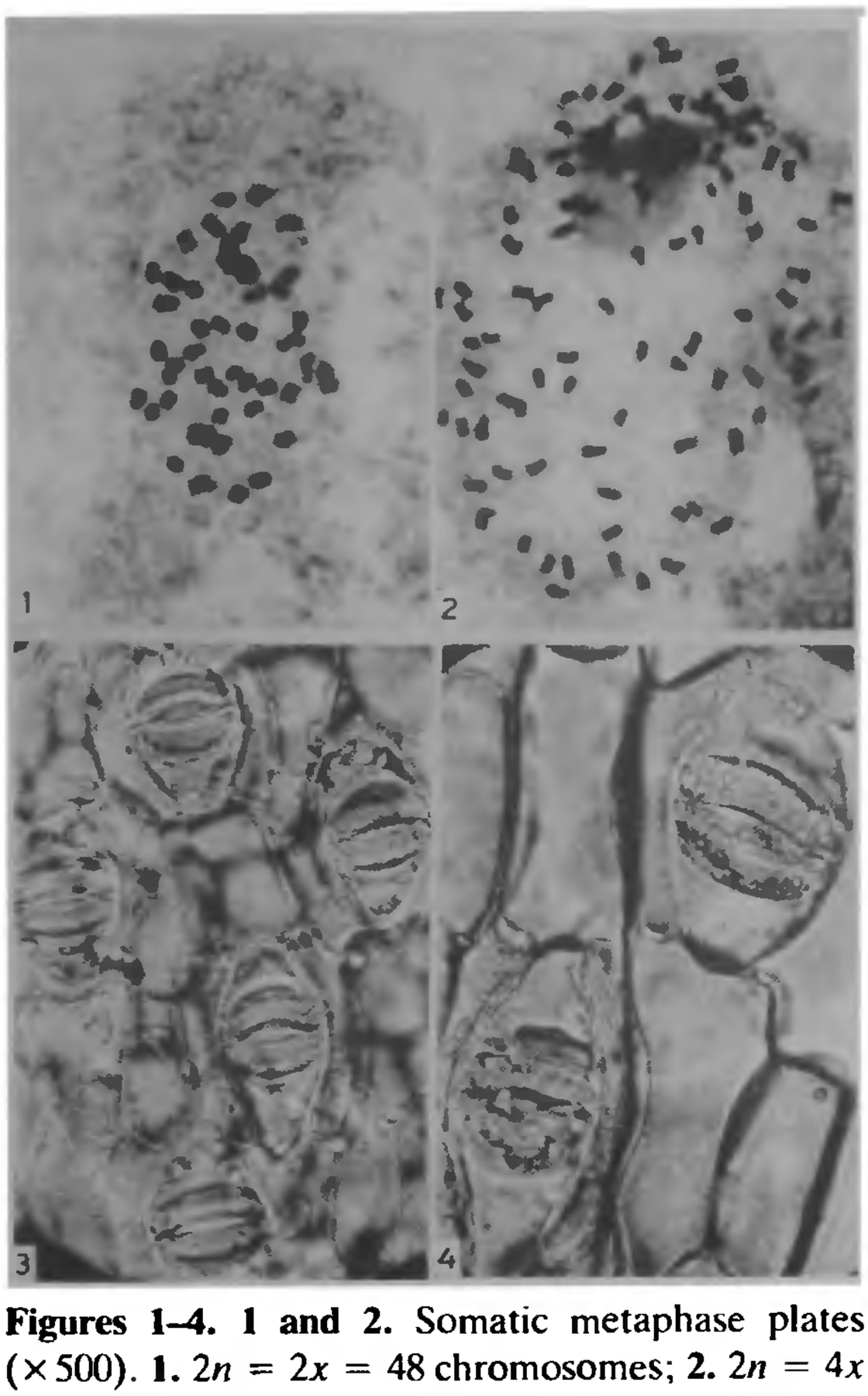
ELETTARIA CARDAMOMUM Maton, a monotypic member of the family Zingiberaceae, forms the chief source of the well-known spice, small cardamom. Literature survey shows that only diploid chromosome numbers have so far been reported in this species[1–3]. Successful induction of tetraploid plants is reported in this note.

Germinating seeds were treated with 0.5% aqueous colchicine solution for 90 min. The seedlings raised from the treated seeds along with their controls were initially grown in polyethylene bags and transplanted to the field when they were ten-month-old. Cytological studies confirmed the tetraploid nature of the treated seedlings with $2n = 4x = 96$ chromosome and the control diploids $2n = 2x = 48$ chromosomes (figures 1 and 2).

The induced tetraploids resembled their diploid progenitors in gross morphology. However, marked difference could be observed in the leaf anatomical characters. Colchitetraploids had thicker leaves (221.25 μm) than diploid controls (185.19 μm). A study of stomatal index showed that the induced tetraploids had fewer stomata per unit area and



Figures 1–4. 1 and 2. Somatic metaphase plates (×500). **1.** $2n = 2x = 48$ chromosomes; **2.** $2n = 4x = 96$ chromosomes. **3 and 4.** Leaf peal of abaxial surface (×142). **3.** Diploid; **4.** Tetraploid.

larger stomata than diploids (figures 3 and 4). Meiotic studies showed that there were very few occurrence of abnormalities like lagging and elimination of chromosomes at anaphase I and II. Pollen fertility was good as adjudged by the germination count. Colchitetraploids were fertile and set capsules when crossed *inter se* as well as with diploids.

The production of colchiploids offers possibilities for improvement of cross-pollinated diploid crops[4]. In cardamom, which is a cross-pollinated diploid crop, induction of fertile tetraploids may offer interesting opportunities for crop improvement.

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ON THE VASCULAR PIGMENT OF SOME FRESHWATER LAMELLIBRANCH MOLLUSCS

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MOLLUSCS are most interesting with regard to their respiratory pigment because the distribution of the pigment shows no ecological or evolutionary correlations[1]. They possess two main types of vascular pigment, viz hemoglobin and hemocyanin. Bivalves are usually reported to have hemoglobin. The pigment is dissolved in the plasma or is lodged within the erythrocytes, if present. The study of the vascular pigment of the bivalves of Gorakhpur area was initiated by Narain[2]. He detected traces of ferric ions in the blood of *Lamellidens corrianus* but could not establish the presence of hemoglobin. The present study examines the issue in greater detail in the case of *Lamellidens corrianus* and other freshwater mussels (*Indonaia caerulia* and *Parreysia favidens*).

The mussels lack erythrocytes[3,4], hence it was presumed that the vascular pigment must be dissolved in their plasma. The plasma of 10 mussels (obtained by centrifugating the blood for 5 min at 3000 rpm) was subjected to spectrophotometry in UV (50000–28000 cm^{-1}), VIS (30000–13000 cm^{-1} and IR (4000–400 cm^{-1}) ranges. To define peaks better, the plasma was diluted 10 times with double-distilled pyrogen-free water for UV and VIS spectra and dispersed in nujol after air-drying at 37°C for IR spectra.

The absorption spectra of the colourless plasma of all the mussels (figure 1) are noticeably uniform in general pattern. This indicates the presence of a similar vascular pigment. The absorption maxima are distributed as follows: