

1. Zentmyer, G. A., *Phytopathology*, 1952, 42, 24.
2. Brasier, C. M., *New Phytol.*, 1975, 74, 183.
3. Ko, W. H., *J. Gen. Microbiol.*, 1978, 107, 15.
4. Dastur, J. F., *Proc. Indian Acad. Sci.*, 1935, B1, 778.
5. Chaurasia, S. C., *Ph.D. Thesis*, University of Saugar, Saugar, India, 1976.

ECCENTRIC STELE IN FASCINATED AERIAL ROOTS OF *IMPATIENS BALSAMINA* L.

V. GOPAL AND K. K. LAKSHMANAN

Department of Botany, Bharathiar University,
Coimbatore 641 041, India

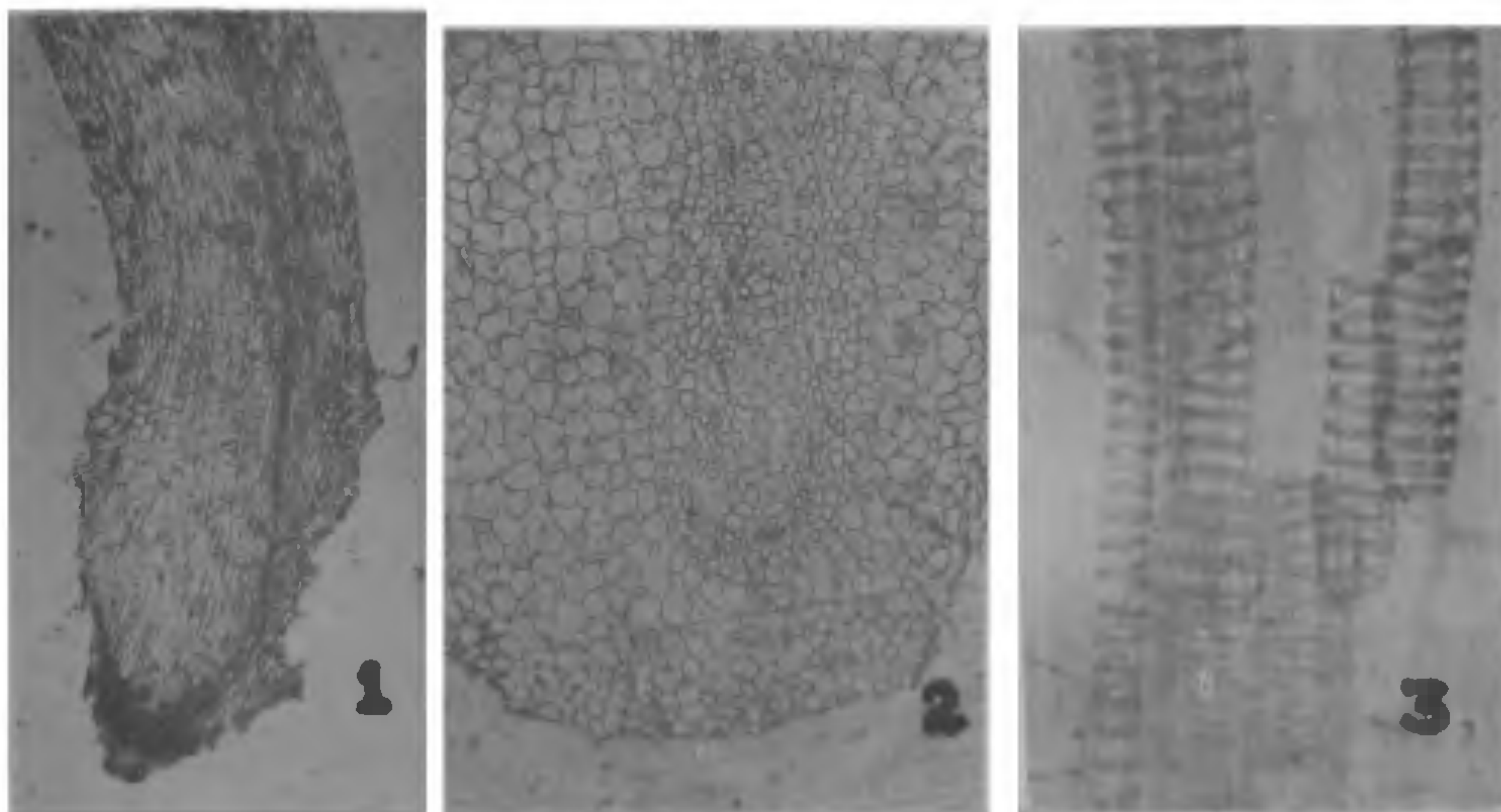
FASCIATION has been reported as well-known teratological abnormality¹. It is characterised by an increase in weight and in volume of the tissue over that of the normal one, relative loss of control over growth area, and a transition from radial to bilateral symmetry. An instance of natural root fasciation in *Impatiens balsamina* L is reported here.

The typical band-shaped or stable type² of fasciated aerial roots were cleared in 10% KOH solution and stained with 1% aqueous safranin. Fasciated aerial root tips and mature regions were sectioned (7 to 15 μ

thick) and stained³ following customary microtechniques.

The fasciated and the normal aerial roots are intermingled, orange in colour and have grown from the lower part of the stem up to 15 to 20 cm or even more in height from ground level. The former are typically bandshaped measuring 20 to 60 mm length, 3 to 7 mm breadth and 1 to 2 mm thick and with the growing point increasing in breadth. The longitudinal section at right angles to the flat surface (Figure 1) and the transverse section (Figure 2) reveal the eccentric position of the stele. In transverse section, the fasciated root and its tissue components (epidermis, cortex, endodermis, pericycle and pith) are seen to be elliptical in outline. More than twenty xylem strands with a corresponding number of alternating phloem patches occur in a fasciated root of 3 mm breadth. The number of vascular strands varied at different levels in the same root. Frequent forking and interconnections of the vascular strands have been observed in cleared preparations (Figure 3).

In nature, accidents and injuries resulting from the attack of fungi, insects, higher animals or unfavourable climatic conditions may impede the regular function of the organisms⁴. The eccentric position of the stele may be attributed to the unequal activity and distribution of the periblem on either side of the plerome. The varying number of vascular strands at different levels of the same fasciated aerial



Figures 1-3. 1. Longitudinal section at right angles to the flat surface of the fasciated aerial root shows the eccentric stele, $\times 95$. 2. Transverse section of the fasciated aerial root shows the eccentric stele, $\times 200$. 3. Forking of a vascular strand in the cleared preparation of the fasciated aerial root, $\times 500$.

roots is due to frequent forking and interconnections.

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1. White, O. E., *Bot. Rev.*, 1948, 14, 319.
2. Gopal, V. and Lakshmanan, K. K. Abstract of the 8th annual conference, Society for advancement of Botany, Chandigarh, 1981, 13.
3. Foster, A. S., *Stain. Technol.* 1934, 9, 91.
4. Sinnott, E. W., *Plant morphogenesis*, McGraw-Hill Book Company, New York, 1960.

EFFECTS OF LEAF EXTRACT OF *VITEX NEGUNDO* ON *LATHYRUS SATIVUS* LINN.

MOHD. SAFIKUR RAHMAN AND GOLOKENDRA NATH BHATTACHARYA

Department of Botany, Visva-Bharati University, Santiniketan 731 235, India

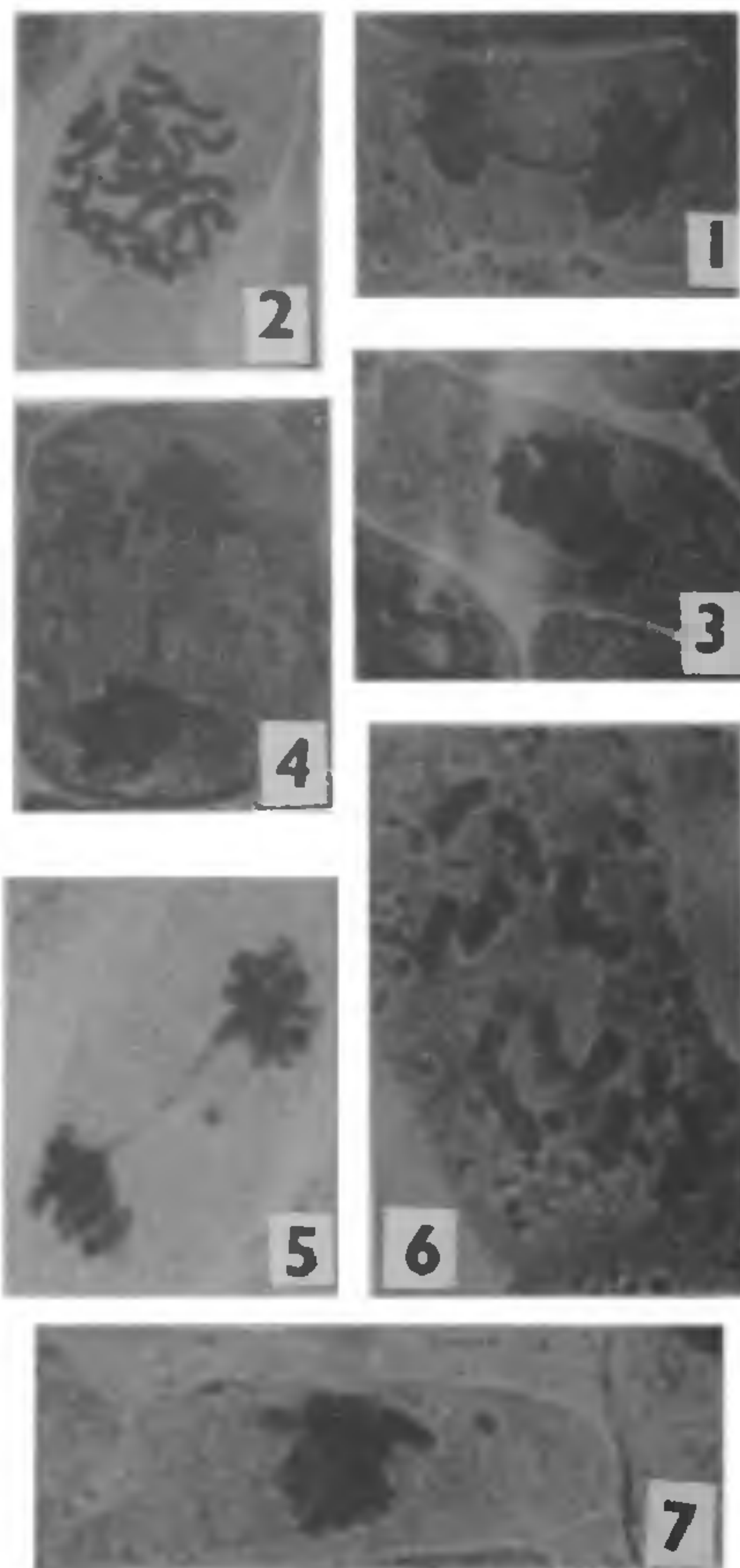
THE leaves of *Vitex negundo* of the family Verbenaceae are generally used by the farmers as a grain-preserving material. As farmers use these leaves of *Vitex negundo* against insect protection of the pulses, it has been considered worthwhile to study the effects of these leaf extracts on the root tips of one of the commonly used pulses, *Lathyrus sativus*. With this end in view, the present investigation has been undertaken.

Extracts have been made with boiled distilled water. One gram of leaf dust of *V. negundo* has been taken and this dust has been mixed with 100 ml boiled distilled water. The mixture, after shaking for 1 hr, has been filtered after cooling and the filtrate has been considered to be 1%. From this stock solution other concentrations have been prepared (0.5%, 0.25% and 0.1%) for the investigation. Germinated seeds of *Lathyrus sativus* have been treated with different concentrations of the leaf extract for varying periods (3, 6, 12, 24 and 48 hr). After the treatment root tips have been fixed in 1 : 3 acetic acid-ethanol mixture for 1 hr and then squashed following usual aceto-orcin procedure.

In the present investigation it has been found that the mitotic index decreases in the case of treated roots in contrast to the control in different concentrations and durations. Within the dividing cells, high percentage of metaphase abnormalities have been observed in 0.25% and 0.5% concentrations and no normal metaphase stage has been noted. Metaphase stages have been found in higher percentages than prophase stages but anaphase and telophase stages occur in a low percentage. The overall abnormalities

are disturbance in polarity, clumping, scattered metaphase, fragments, polyploidy, stickiness, bridges and laggards, etc. Among the abnormalities, clumping, scattering and bridges have been prominently noticed.

The leaf extract of *V. negundo* on root tips of *Lathyrus sativus*, causes imbalance in the frequencies of mitotic stages. A high percentage of the frequency of metaphase has been found. The high percentage of metaphase stage may be at the expense of prophase stage, which has been observed at very low frequency in relation to metaphase stage. This finding agrees



Figures 1-7; 1. Somatic bridge; 2. Polyploidy; 3. Clumping; 4. Laggard chromosome; 5. Somatic bridge with a fragment; 6. Scattered metaphases; 7. fragment.