fuchsin at room temperature (27–32° C) before they were transferred to a freezer (−2° C to 0° C) where they were allowed to remain for a week. Subsequently, they were taken out and squash preparations were made after thawing (duration 8–12 min) at room temperature. Observations of nucleus and chromosomes indicate that the intensity of magenta colour of chromosomes brought about by Leuco basic fuchsin was similar to the preparations made out of freshly stained roots (figures 1 and 2). The retainability of stain could be extended upto two weeks without alteration in the chromosome morphology.

Figure 1. Mitotic squash preparations from the root tips of *Erianthus* clone (SES 311 2n = 40) freshly stained roots.

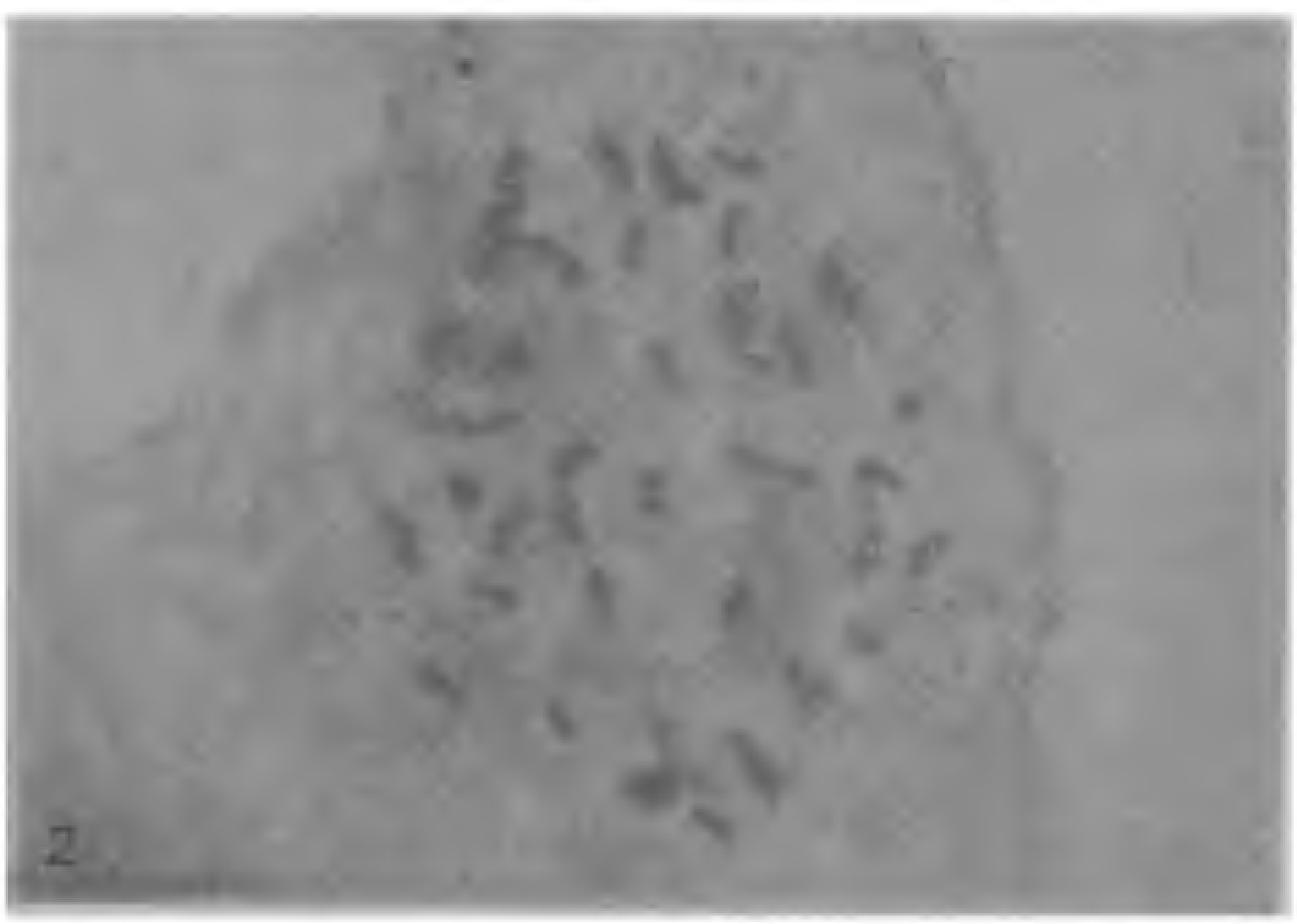

Figure 2. Mitotic squash preparations from the root tips of *Erianthus* clone (SES 79 2n = 40) preserved in Leuco basic fuchsin in freezer for a week. Note the intensity of the staining of chromosome.

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1. Sharma, A. K. and Sharma, A., *Chromosomal techniques, theory and practice*, Butterworths, London, 1965, p. 116.
2. Darlington, C. D. and LaCour, L. F., *The handling of chromosomes*, Sixth Edition Revised by L. F. LaCour, George Allen and Unwin Ltd., London, 1976, p. 48.
3. Sreenivasan, T. V., *Cytogenetical studies in Saccharum and allied genera*, Ph.D. Thesis, University of Madras, Madras, 1969, p. 29.

ABSCISIC ACID—STIMULATED ROOTING IN HYPOCOTYL CUTTINGS OF COWPEA

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THE role of abscisic acid (ABA) in the control of growth and development in plant systems has been well documented[1–3]. With few exceptions, ABA inhibits the growth of whole plants or explanted organs and tissues. ABA is known[1] to promote growth in three instances: (a) parthenocarpic fruit development in rose; (b) promotion of hypocotyl elongation in cucumber; and (c) rooting of stem cuttings of mungbean and ivy. The effect of ABA alone, or in conjunc-

TABLE 1

Effects of IAA and ABA individually and in combination on rooting in hypocotyl cuttings of cowpea

Treatment	Average number of roots per cutting on 17th day	Day on which visible root pri-primordia appear on cuttings
1. Control	25.4 ± 1.6[a]	5
2. IAA (5 μg/ml)	40.8 ± 2.1[a]	5
3. ABA (1 μg/ml)	40.2 ± 1.8[a]	5
4. ABA (5 μg/ml)	35.6 ± 1.5[a]	6
5. ABA (1 μg/ml) + IAA (5 μg/ml)	45.3 ± 2.3[a]	4
6. ABA (5 μg/ml) + IAA (5 μg/ml)	37.8 ± 2.2[a]	5

[a]Refers to standard error.

Data presented are average of duplicate experiments, with 10 replications for each treatment.

tion with the auxin, indole-3-acetic acid (IAA), on adventitious root development in hypocotyl cuttings of cowpea (*Vigna sinensis* Endl. cv. CO.3) is reported in this communication.

The source of the seed material and the experimental procedure have been described elsewhere[4]. From 10-day old seedlings, hypocotyl cuttings of uniform length (about 12 cm) were excised. The cuttings were divided into 6 batches of 10 each. One batch was kept as control by dipping the cut ends in distilled water and the rest were subjected to treatment for 48 hr, as shown in table 1. The test solutions were changed after 24 hr to minimise microbial contamination. On 3rd day, all the cuttings were transferred to distilled water, in which they were maintained for another 15 days with change of water on alternate days. The average maximum and minimum temperature during the experimental period was 31.2° C and 23.4° C, respectively. Observations and recorded data for duplicate experiments are given in table 1.

The results of the experiments clearly indicate that IAA and ABA in both the concentrations employed. stimulate root formation in hypocotyl cuttings. Low concentration (1 μ g/ml) of ABA stimulated rooting effect is comparable with that of IAA-stimulated rooting effect. Low concentration (1 μ g/ml) of ABA, when applied in conjunction with IAA, exerts a slight synergistic effect in furthering root development. Even the appearance of visible root primordia on cuttings treated with ABA (1 μ g/ml) + IAA combination occurs one day earlier than the cuttings treated with IAA and ABA (1 μ g/ml) individually. Nevertheless, high concentration (5 μ g/ml) of ABA, when applied to the cuttings in combination with IAA, the former slightly antagonises the root-stimulation effect of the auxin. Recently, it has been demonstrated that ABA further stimulates the auxin-induced cell division and DNA synthesis in excised tuber tissues of Jerusalem artichoke[5]. Though, synergistic effects between auxins and phenolic substances[6,7] and between auxins and gibberellic acid[8,9] are known in promoting adventitious root formation in excised cuttings, synergistic effect between low concentration of ABA and auxin in furthering root development is reported for the first time.

28 September 1981

1. Addicott, F. T. and Lyon, J. L., *Annu. Rev. Plant Physiol.*, 1969, **20**, 139.
2. Milborrow, B. V., *Annu. Rev. Plant Physiol.*, 1974, **25**, 259.
3. Walton, D. C., *Annu. Rev. Plant Physiol.*, 1980, **31**, 453.
4. Janardhanan, K. and Lakshmanan, K. K., *Curr. Sci.*, 1981, **50**, 459.
5. Minocha, S. C., *Z. Pflanzenphysiol.*, 1979, **92**, 327.
6. Gorter, C. J., *Physiol. Plant.*, 1969, **22**, 497.
7. Haissig, B. E., *N. Z. J. For. Sci.*, 1974, **4**, 311.
8. Bhattacharya, S., Bhattacharya, SDe. and Malic, C. P., *Planta.*, 1978, **138**, 111.
9. Adhikari, U. K. and Bhatacharya, D., *Planta.*, 1978, **143**, 331.

THE VOLUME OF CORPORA ALLATA IN RELATION TO THE EGG MATURATION OF THE SWEET POTATO WEEVIL, *CYLAS FORMICARIUS* F. (COLEOPTERA: CURCULIONIDAE)

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The corpora allata (CA) as the source of gonadotropic hormone in insects was first observed by Wigglesworth[1] in *Rhodnius prolixus* and later confirmed by various workers[2,3]. During periods of egg maturation, the size of the CA in *Rhodnius prolixus* increases markedly[1]. The change is basically due to the increase in the size and number of nuclei. The correlation between egg maturation and increased cytoplasmic volume of the CA has been found in many insects[4-6]. In the present communication, the cyclical changes in the volume of the CA was correlated with the egg development and presented.

The sweet potato weevil was mass cultured in the laboratory under controlled conditions (28 ± 1° C; 70 ± 5% relative humidity and 12 hr photoperiod). Late pupae were segregated from the infested tubers

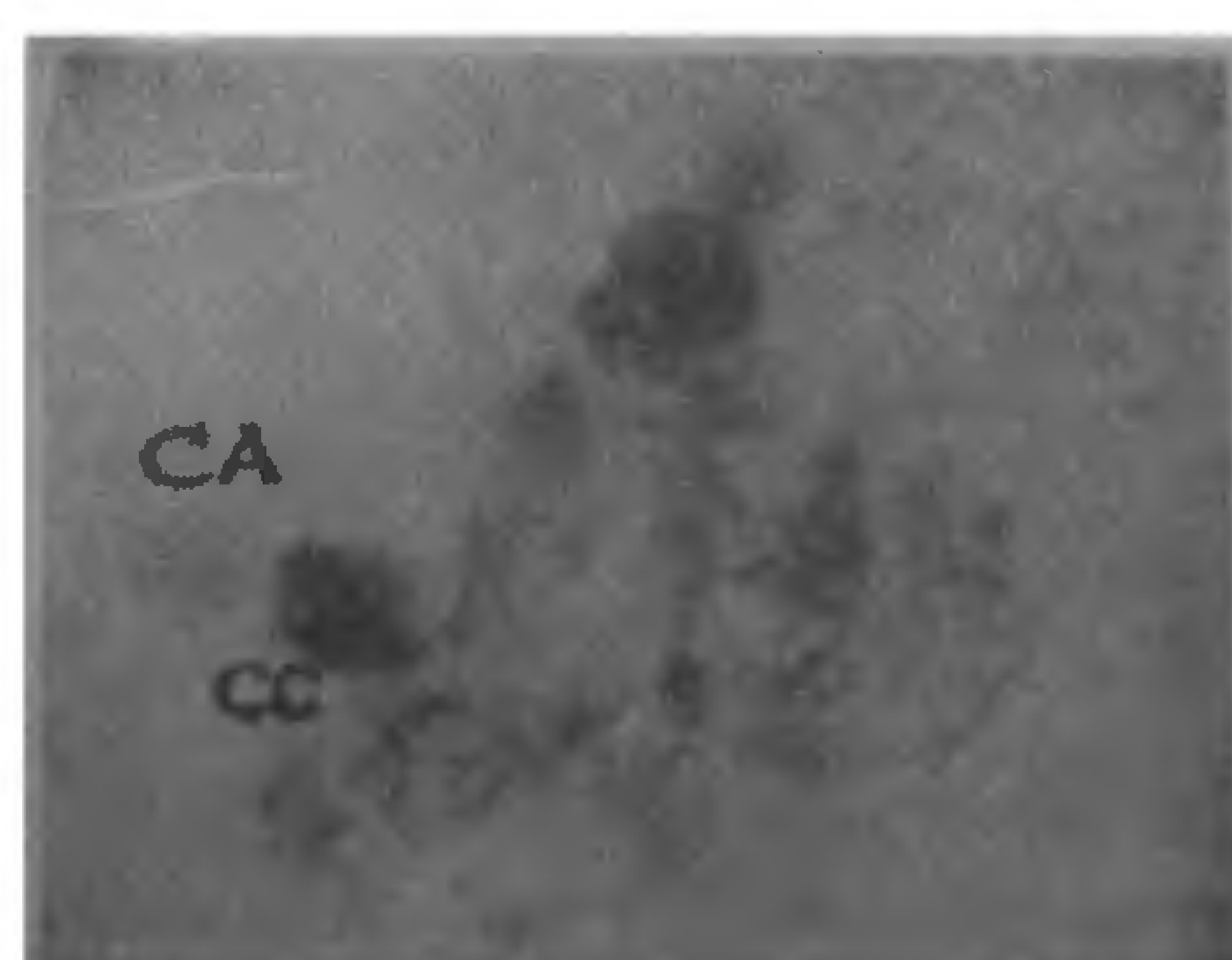

Figure 1. Corpora allata and corpora cardiaca of the sweet patato weevil separated from the brain (600 ×). CA—corpus allatum, CC— corpus cardiacum.