and in about 35% of the cells $35_{II} + 3_I$ were recorded. The percentage of pollen fertility of plants of groups I and II was 58·00 and 52·00 respectively.

These investigations show that the origin of trisomics in F_1 progeny of the cross between the natural Indian hexaploid *S. nigrum* and *S. opacum* might be due to fusion of the male gamete of *S. opacum* carrying 37 chromosomes with the female gamete of *S. nigrum* containing 36 chromosomes resulting plants with 73 chromosomes. The origin of male gametes in *S. opacum* with 37 chromosomes is likely due to the precocious separation of a bivalent at metaphase$_I$.

Department of Botany,
University of Madras,
Autonomous P.G. Centre,
Tiruchirapalli 620 020,
July 2, 1979.

ANIL KUMAR.
G. R. RAO.

DORMANCY REGULATION IN GROUNDNUT SEEDS (*ARACHIS HYPOGAEA* L.) C. VAR. TMV-3

DORMANCY phenomenon in plants has been attributed to many factors including hormonal, mechanical and maturity[1]. In groundnut seeds (Var. TMV–3) natural dormancy was attributed to the low levels of growth promoting substances (auxins and gibberellins) and high levels of inhibitory substances[2,3]. In the present investigation, an attempt has been made to study the changes in indoleacetic acid, gibberellic acid and β-inhibitor (ABA), taking into consideration the activities noticed in the bioassay tests, specific to these compounds, along with the changes in the two phenolic compounds (*p*-coumaric acid and coumarin) in relation to dormancy regulation in these seeds.

Growth substances were extracted (using 3 g of seed material, cotyledons and embryonic-axes, separately) according to the method of Villiers and Wareing[4]. Following the method of Gordin–Sharir and Wareing[5], the extracts were chromatographed and the activity assayed using the rice coleoptile straight growth technique[6]. Gibberellin-like substances were extracted following the method of Corcoran and Phinney[7] and assayed using cucumber hypocotyl extension bioassay[8]. Phenolic compounds were extracted and estimated following the method of Bate Smith[9] as modified by Das and Rao[10].

In the dormant (0-day) seed parts, high levels of β-inhibitor activity (ABA) with negligible amounts of IAA and GA_3 was evident (Fig. 1). During dry storage after-ripening, a steep rise in the amounts of IAA and GA_3 took place by 20-days, associated with a fall in β-inhibitor activity. The 20-day after-ripened seeds exhibited 30% germination and the seedlings showed much stunted growth. The amounts of both the inhibitory phenolic compounds (coumarin and *p*-coumaric acid) were very high, in both the seed parts at 0-day (dormant) stage and decreased by 20 days (partially dormant), even though, their levels were much higher compared to 40-day (non-dormant) seeds (Table I). Apparently, the partial dormancy at 20-day stage, inspite of high levels of IAA and GA_3 (almost on par with non-dormant seeds), and very low level of β-inhibitor (ABA) could be due to the relatively high amounts of *p*-coumaric acid and coumarin which were shown to antagonise the IAA and GA_3 induced metabolic processes[11]. The second phase of after-ripening (between 20 and 40-days) was associated with very little change in IAA and GA_3 levels and the complete absence of β-inhibitor (ABA), in both the seed parts. However, the amounts of both the phenolic compounds had declined still further and were much lower than the 20-day seeds, especially in the embryonic axes. The quantum of reduction was much higher between 20 and 40 days than between 0 and 20 days. The seeds at 40 days were non-dormant and showed normal germination response. The lowered levels of these two phenolic compounds might have facilitated the expression of IAA and GA_3 mediated processes, preceding radicle emergence, leading to normal germination. Apparently, dormancy regulation in groundnut seeds is a complicated process, governed not only by an appropriate hormonal balance but also by certain other compounds like phenolics which seem to have a regulatory role either directly or indirectly[11]. Dormancy release in groundnut, seeds seem to be a two step process, the first 20 days of dry storage after-ripening facilitating normalisation of hormonal levels and the later 20 days resulting in the attainment of proper balance amongst different compounds influencing germination. The findings of Sengupta *et al.*,[12] as to the efficacy or otherwise of exogenous hormonal treatments at different intensities of dormancy in groundnut seeds also suggest the complexity of factors governing dormancy in groundnut seeds.

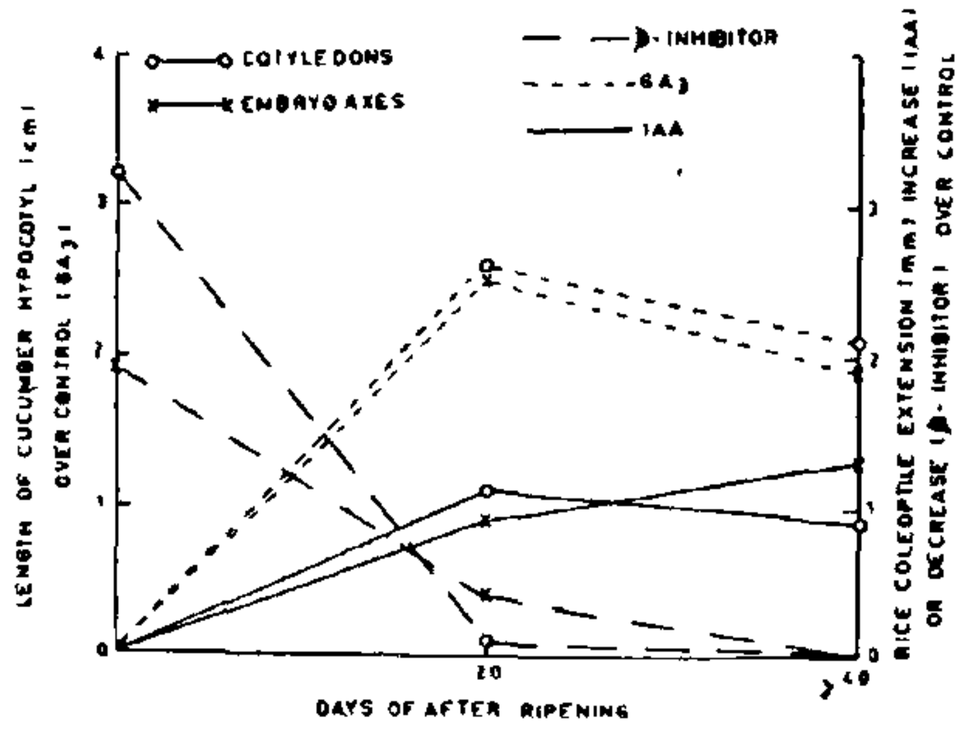


FIG. 1. Charges in the endogenous levels of IAA, GA_3 and β-inhibitor in seed parts during dry storage after ripening.

TABLE I

Changes in phenolic compounds in seed parts during dry storage after ripening

Phenolic compound	Days of after-ripening					
	0		20		40	
	Cotyledons	Embryonic axes	Cotyledons	Embryonic axes	Cotyledons	Embryonic axes
P-coumaric acid (μgm/gm. dry weight)	95·3	547·3	64·3	456·2	60·03	316·2
Coumarin (mg/gm. dry weight)	9·0	17·0	7·2	15·3	4·5	12·0

We are thankful to Prof. V. S. Ramadas, Professor and Head of the Department of Botany, for providing facilities and encouragement. The senior author is thankful to the U.G.C. for providing financial assistance.

Department of Botany,
S.V. University College,
Tirupathi 517 502,
July 30, 1979.

M. R. K. RAO.*
I. M. RAO.

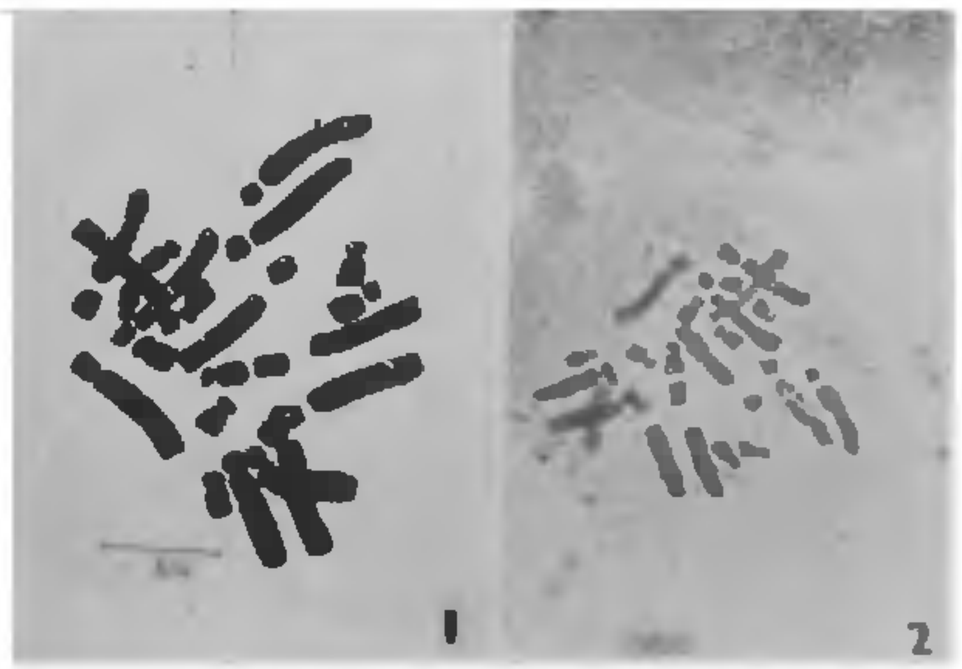
* Present Address: Central Institute for Cotton Research, Regional Station, Coimbatore 641 003.

1. Amen, R. D., *Bot. Rev.*, 1968, **54**, 1.
2. Sreeramulu, N., *Ph.D. Thesis*, S.V. University, 1968.
3. Rao, M. R. K., *Ph.D. Thesis*, S.V. University, 1974.
4. Villiers, T. A. and Wareing, P. F., *J. Expt. Bot.*, 1960, **16**, 533.
5. Gordin–Sharir, A. and Wareing, P. F., *Nature*, 1964, **204**, 1308.
6. Das, V. S. R., Raju, P. V. and Rao, M. P., *Curr. Sci.*, 1966, **35**, 50.
7. Corcoran, M. R. and Phinney, B. O., *Physiol. Plant*, 1962, **15**, 252.
8. Brian, P. W., Hemming, H. G. and Lowe, D., *Ann. Bot.*, 1964, **28**, 369.
9. Bate Smith, E. C., *Biochem. J.*, 1954, **58**, 122.
10. Das, V. S. R. and Rao, J. V. S., *Curr. Sci.*, 1964, **33**, 471.
11. Kefeli, V. L. and Kadirov, C. Sh., *Ann. Rev. Plant Physiol.*, 1971, **22**, 185.
12. Sengupta, U. K., Sirohi, G. S., Kaim, M. S. and Pokhriyal, T. S., *Indian J. Plant Physiol.*, 1977, **20**, 92.

OCCURRENCE OF TRIPLOIDY IN *ALOE VERA* TOURN. EX LINN.

Aloe vera Tourn. ex Linn. belonging to the family Liliaceae is a native of North Africa, Canary Islands and Spain. It has spread to the East and West Indies, India, China and other countries. This species is naturalised in India and found in a semi-wild state in all parts of India up to Cape Comorin. This plant is extensively used in the Indian system of medicine specially as a stomachic, purgative, emmenagogue, anthelmintic, in piles and rectal fissures[1]. This plant is also used to reduce body temperature. While making a cytological study of this species grown at the Ethno Botanical Garden of the Botany Field Research Laboratory, a plant collected from the monazite region of Cape Comorin was found to be a triploid ($2n=3x=21$) and is being communicated in this note.

For karyotype analysis root tips were fixed in 1 : 3 acetic acid-ethanol and stained in 2% acetic-orcein and 1N HCl mixture (9 : 1). Several metaphase plates from different root tips were examined and those with well spread chromosomes were drawn at a magnification of × 1,800 (Fig. 1). Microphotographs were taken from temporary preparations using a ZORKI 4 camera (Fig. 2).



FIGS. 1 and 2. Somatic metaphase chromosomes of triploid *A. vera* ($2n = 3x = 21$). Fig. 1. Camera lucida drawing. Fig. 2. Microphotograph (× 1,350).

The somatic chromosome number showed $2n = 3x = 21$ with 12 long chromosomes and 9 short chromosomes. The long chromosomes range in length from 10·34 μm to 13·33 μm and the short chromosomes from 3·33 μm to 4·00 μm. Depending upon the length of the chromosomes as well as the arm ratio and centromeric index, based on Levan *et al.*,[2] the following groupings were made :