



Figures 2 and 3. Cap-like growth islands having rounded or smoothed sides. The circled island is rhombic in shape. The smoothing is more pronounced in the case of islands shown in figure 3. Polarized light, 100 \times .

solution in the container and the thickness of a crystal growing on the bottom become equal, then the upper face of the crystal may retain a thin film of solution and the solute left in such a thin film may not be sufficient to deposit complete layers. The result is that the already present 2D nuclei on the crystal face grow further only to a certain extent. If, on such a process, the situation of increase in the supersaturation of solution film (achieved by cooling the solution) is superimposed, then it can lead to smoothing of the faces.

It was established in the case of solution-grown biphenyl² and naphthalene³ that if the supersaturation of the solution crossed a critical higher supersaturation value, then a roughening transition took place in the growing crystals; the crystals became non-faceted. It can therefore be envisaged that the presently observed smoothing of the growth islands can well be due to a roughening transition, triggered by an increased supersaturation in the thin film of solution present on the anthracene crystal faces.

23 May 1988

1. Robinson, P. M. and Scott, H. G., *J. Cryst. Growth*, 1967, 1, 187.
2. Human, H. J., Van der Eerden, J. P., Jetten, L. A. M. J. and Odekerken, J. G. M., *J. Cryst. Growth*, 1981, 51, 589.
3. Jetten, L. A. M. J., Ph.D. thesis, University of Nijmegen, 1983.

INDUCTION OF ACIDOSIS BY ACUTE ORAL EXPOSURE TO INSECT REPELLENT N,N-DIETHYLPHENYLACETAMIDE IN RATS

S. S. RAO and S. S. PURKAYASTHA*

Defence R & D Establishment, Gwalior 474 002, India.

*Defence Institute of Physiology and Allied Sciences, Delhi Cantt 110 010, India.

N,N-Diethylphenylacetamide (DEPA) is a new mosquito repellent superior to many known insect

repellents from cost and efficacy considerations¹. Toxicology of DEPA has been reported recently²⁻⁴ but acid-base changes during poisoning with DEPA, a liquid, by accidental or intentional exposure through oral route are not known. The present investigation was designed to observe the effect of DEPA on acid-base status and allied parameters in rats since acidosis was reported earlier in human beings⁵ who consumed liquid formulations of the well-known insect repellents like dimethylphthalate (DMP) and N, N-diethyl-m-toluamide (DEET) by accident or to commit suicide.

Adult female albino rats (Wistar strain) were used for studies in two sets, the first weighing 180–240 g and the second 155–210 g. Before administration of the compound mixed arterio-venous blood samples (0.15 ml) were collected from the orbital sinus of rats into special heparinized capillaries (M/s Radiometer, Copenhagen, Denmark) which were sealed immediately, analysed and served as control samples.

DEPA was then administered using an oral dosing needle to the first and second sets of rats in doses of 851 or 1702 mg/kg body weight respectively, corresponding to a median lethal dose (LD₅₀) or twice LD₅₀ for female rats². Blood was sampled for a second time when the rats showed symptoms of poisoning like hyperaemia, hyperactivity, severe distress and a final comatose state². The time of sample collection averaged 35.5 min (15 to 62 min) for 1 LD₅₀ group and 11.5 min (8 to 15 min) for the 2 LD₅₀ group. Blood was analysed immediately after collection in ABL-3 (Acid-Base Laboratory, manufactured by M/s Radiometer, Copenhagen, Denmark), an autoanalyser that quantitatively measures and calculates pH and blood gas parameters on a single 125 µl sample of whole blood⁶. Statistical

analysis of data was by Student's *t* test for paired samples.

Changes in pH, PCO₂ and plasma bicarbonate level are given in table 1. Severe acidosis, significant elevation of PCO₂ and reduction of plasma bicarbonate were observed in rats treated with the high doses. Simultaneous elevation of PCO₂ and decrease of plasma bicarbonate indicate metabolic as well as respiratory acidosis. These findings suggest that therapy for accidental or intentional poisoning with DEPA should be aimed at correction of acidosis along with other suitable measures like haemodialysis recommended for individuals poisoned with DEET⁵.

27 June 1988

1. Kalyanasundaram, M., Amalraj, D., Paily, K. P., George, N. and Sujatha, C. H., *Curr. Sci.*, 1986, **55**, 266.
2. Rao, S. S. *et al.*, *Indian J. Med. Res.*, 1987, **85**, 626.
3. Prakash, S., Rao, S. S., Kumar, S. and Rao, K. M., *Indian J. Pharm. Sci.*, 1987, **49**, 220.
4. Rao, S. S., Prakash, S. and Rao, K. M., *Indian J. Med. Res.*, 1988, **88**, 76.
5. Konovalov, G. A. and Romanov, A. N., *Anest. Reanim.*, 1980, **2**, 54.
6. *ABL-3 User's Hand Book*, Radiometer A/S: Emdrupvej, Copenhagen, Denmark, 1981.

A NEW ANTHRAQUINONE GLYCOSIDE FROM THE SEEDS OF *PEGANUM HARMALA* LINN.

M. L. KHUBCHANDANI and S. K. SRIVASTAVA
Department of Chemistry,
Dr Hari Singh Gour Vishwavidyalaya,
Sagar 470 003, India

PEGANUM HARMALA L. (Rutaceae) is a medicinal plant employed in our indigenous system of medicine¹. Previous studies on the seeds of *P. harmala* have disclosed the presence of sterols, alkaloids and anthraquinones^{2,3}. Further examination of the seeds of this plant has led to the isolation of a new anthraquinone glycoside (I) along with two known compounds.

Table 1 Changes in acid-base status and allied parameters of blood of rats after oral administration of N, N-diethyl-phenylacetamide

DEPA dose: 851 mg/kg		1702 mg/kg	
Control	Treated	Control	Treated
Blood pH			
7.322 ± 0.040	6.840 ± 0.115*	7.340 ± 0.022	6.842 ± 0.065**
PCO ₂ , mm Hg			
42.20 ± 4.02	71.20 ± 10.10	42.20 ± 1.12	83.65 ± 5.90**
Plasma HCO ₃ , mmol/l			
21.18 ± 0.96	11.35 ± 2.12*	22.40 ± 1.18	11.08 ± 1.45**

Data are mean ± SE of 4 rats in each group, Statistical significance: **P* < 0.05; ***P* < 0.01.