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I-Leucopenic Effect of *Rhazya stricta*

Two alkaloids obtained from *Vinca rosea*, vinblastine and vincristine, have antileukaemic and anticancer activity and so we have screened other plants of the same family (apocynacea) for similar activity. *Rhazya stricta* Diceisne, a gregarious dwarf shrub which grows wild in West Pakistan and is rich in alkaloids¹⁻⁴, proved to have a leucopenic effect.

Fig. 1 Leucopenia produced in rats, after a dose of 15 mg/kg body weight. ---, Control.

Fig. 2 WBC, RBC and platelet count in albino rats after a single intraperitoneal injection of the *Rhazya stricta* extract.

A single intraperitoneal injection of an extract of *R. stricta* (15 mg/kg body weight) reduced significantly the total white blood cell count of adult albino rats. As Fig. 1 shows, there was a sharp decline on the day after injection and a 50–60% reduction within 3 days. The count returned to normal in 7–10 days. There was no change in the cell count of control rats.

In another group the drug caused a sharp decline in WBC count but did not affect the red cell count, while the platelet count increased slightly. Leucocyte count and platelet count later returned to normal. There was no significant change in the haemoglobin content.

When rats were given 20 mg/kg of the extract orally, there was a marked leucopenic effect. The decrease in the WBC was gradual and lasted 9–10 days (Fig. 2). No rebound leucocytosis was observed.

The rapid onset of leucopenia suggests that extract of *Rhazya stricta* has a selective action on circulating white blood cells. On the other hand, the long duration of leucopenia may be due to a reversible depression of bone marrow. Perhaps the bone marrow is also depressed selectively, and while the WBC count is depressed the RBC count and the haemoglobin level remain normal.

In dogs, an intravenous dose of 80 mg/kg of the extract produced intense salivation and rigor, followed by respiratory failure, convulsions and death within 15 min. Oral subacute toxicity investigation in rats given 150 mg/kg of the drug once a week for 12 weeks showed a loss of about 10% of original body weight. Three out of twenty-five rats died, while two from the control group died from secondary infection. This drug has no side effects on the other systems of the body and its toxicity is also negligible when administered orally. We are now investigating the action of this drug in experimental leukaemia and in animals with transplanted tumours.

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Received April 7; revised July 9, 1971.

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Evolution of Mixed Populations of Genetically Different Mitochondria in *Paramecium aurelia*

MITOCHONDRIA are clearly not strictly autonomous organelles and depend for their biogenesis on both nuclear and mitochondrial information¹⁻⁵. But how autonomous is the mitochondrion with respect to other mitochondria within a cell?

We have tried to answer this question in *Paramecium aurelia* using the method developed for yeast⁶⁻⁹. Two genetically different types of mitochondria are brought together within the same cell and the behaviour and evolution of such "hetero-mitochondriotes" are studied through vegetative growth. A number of cytoplasmically inherited mutations of resistance to antibacterial antibiotics such as erythromycin and chloramphenicol have been obtained in *P. aurelia* (refs. 10 and 11 and unpublished work of A. A. and J. B.). These mutations, E^R or C^R, which are probably located in mitochondrial