The controls were deeply sedated after reserpine, with decrease in muscular tone, eyelid ptosis and diarrhoea. Pretreatment with α-methyldopa before reserpine administration, however, resulted in the occurrence of exophthalmos (for 4–5 hr.), an increase in muscular tone with a state resembling catatonia (for 3–4 hr.) and an absence of diarrhoea (for 8–24 hr.). After 24 hr. all rats were mildly sedated and had diarrhoea. At this time the animals pretreated with α-methyldopa could no longer be distinguished from the controls given reserpine only.

The administration of a potent catechol-*O*-methyltransferase inhibitor α-propyldopacetamide (H22/54 Hässle Ltd.) 300 mg./kg. immediately before and 4 hr. after the administration of reserpine, did not influence the appearance or the duration of the symptoms. In a second series of experiments rats were pretreated with α-methyl-*m*-tyrosine in place of an equal dose of α-methyldopa. The results obtained from rats administered α-methyl-*m*-tyrosine plus reserpine, however, did not differ from those of the reserpine treated controls.

The syndrome noticed after reserpine administration in rats pretreated with α-methyldopa has been tentatively ascribed to a liberation of α-methylated catecholamines in the brain. Since α-methyldopamine is known to disappear from the brain within 16–20 hr. after the administration of α-methyldopa, the signs noted are probably caused by α-methylnoradrenaline. This substance is not attacked by monoamine oxidase, a fact which may account for the prolonged action observed in this experiment. When reserpine depletes the brain stores of naturally occurring catecholamines there are only rapidly transient signs of sympathetic activity. The absence of corresponding signs and symptoms after pretreatment with α-methyl-*m*-tyrosine may indicate that its corresponding decarboxylation product (metaraminol) is devoid of central action.

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Banana and Restraint Ulcers in Albino Rats

SIR,—Banana has been reported to markedly decrease histamine induced gastric acidity (Sanyal, Das, Sinha and Sinha, 1961), and to have prophylactic value in phenylbutazone-induced gastric ulcers in guinea-pigs (Sanyal, Gupta and Chowdhury, 1963). Encouraged by these results it was thought worthwhile to screen the efficacy of banana in another test preparation which simulates human peptic ulcer in its pathogenesis. Restraint ulcer technique (Brodie and Hanson, 1960) was selected, because the lesions produced by this method are consistently in the glandular portion of the stomach and are the result of a physiologically induced stress.

Male albino rats (140 to 170 g.) were divided into two groups. One group of 10 rats acted as control. In the second group of 15 rats the usual diet was

replaced by powdered, air-dried unripe banana pulp 48 hr. before the fasting stage of 18 hr. during which free access to water was allowed. Following the fasting period the rats were put individually into a tightly fitting metal corset after immobilisation of their limbs by adhesive tape. The tail was also immobilised by fixing it to the outer wall of the corset. The animals were killed after 24 hr. of restraint and the stomach removed and cut along the greater curvature to open the gastric mucosa which was washed carefully to remove superficial blood clots. Specimens were examined both macro- and micro-scopically. The presence of at least one area of erosion of the gastric mucosa was taken as the criterion for positive appearance of ulcer. Experiments on the control group were interspersed between those of the treated group. Evaluation of the pathology was always by the "blind" method. The results are in Table I.

TABLE I

THE EFFECT OF BANANA POWDER ON THE INCIDENCE OF RESTRAINT ULCERS IN ALBINO RATS

Group	No. of rats	Animals with ulcers		Animals with haemorrhage	
		No.	per cent	No.	per cent
Control ..	10	8	80	8	80
Banana fed ..	18	2 ($P < 0.01$)	13·3	7*	46·7 $P > 0.05$

* 5 rats showed only few punctiform haemorrhagic spots but no erosion.

Superficial mucosal ulcers in the glandular portion of the stomach were found in 80 per cent of the control rats. Ulcerated stomach was invariably accompanied with frank intragastric haemorrhage. Microscopically there was erosion of the mucosa, dilatation and congestion of the blood vessels and sometimes oedema of the mucosal and submucosal layers. In the banana-fed rats small ulcers were present in only 13·3 per cent of rats ($P < 0.01$). These rats had frank intragastric haemorrhage also. In all other rats either the stomach showed microscopically normal appearance or slight vascular dilatation.

The mechanism of restraint ulcer is not clear, but parasympathetic overactivity and nervous dysfunction related to corticovisceral activities during restraint have been suggested as the possible factors (Hanson and Brodie, 1960). The present work therefore, shows that banana powder, besides its prophylactic value against chemical (phenylbutazone) ulcers as reported earlier (Sanyal, Gupta and Chowdhury, 1963) can also afford significant protection against ulcers produced by a stress situation.

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