

## LETTERS TO THE EDITOR

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### REFERENCES

1. Brown and Wright, *J. biol. Chem.*, 1956, **220**, 431.
2. Ashley, Brown, Okita and Wright, *ibid.*, 1959, **232**, 315.
3. Cox and Wright, *J. Pharmacol.*, 1959, **126**, 117.
4. Cox, Roxburgh and Wright, *J. Pharm. Pharmacol.*, 1959, **11**, 535.

### Carcinoid Tumours and Pineapples

SIR,—The presence of 5-hydroxytryptamine (5-HT) and its precursors in fruits has been reported in recent years<sup>1,2</sup>. The ingestion of large quantities of banana and tomato may lead to erroneous chemical diagnoses of carcinoid tumours by producing an increased urinary excretion of 5-HT and its metabolites. These fruits should be eliminated therefore from the diets of patients whose urinary indoles are being measured. To the list of forbidden fruits, Bruce<sup>3</sup> in Australia has recently added the pineapple. Firstly he showed that fresh and canned pineapple juice contain much 5-HT (12–25  $\mu\text{g./ml.}$ ), and secondly he found that the rate of excretion of 5-hydroxyindoleacetic acid (5-HIAA) was increased 10-fold after the ingestion of 500 ml. commercial canned pineapple juice.

During a systematic examination over 2 years ago of the presence of indole compounds in plants, we had detected only traces of indole derivatives in fresh pineapples, and Foy and Parratt<sup>4</sup> this year obtained a similar result using the fruit gathered from the trees in Nigeria. A re-investigation of the problem was thus needed.

Fresh pineapple, three brands of canned pineapple juices, and a sample of bottled juice were extracted with acetone, and after removal of the acetone the extracts were subjected to paper chromatographic analysis and to bioassay using the rat uterus preparation. The concentrations of 5-HT in no case exceeded 1.5  $\mu\text{g./ml.}$  juice and there were only traces of tryptophan and indoleacetic acid. It seems unlikely therefore that the ingestion of much pineapple juice would increase the excretion of 5-HIAA above the range (2–10 mg./day) found in patients who do not have carcinoid tumours. It should be pointed out that none of the preparations of pineapple used in the present work was of Australian origin.

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### REFERENCES

1. Waalkes, Sjoerdsma, Crevelung, Weissbach and Udenfriend, *Science*, 1958, **127**, 648.
2. West, *J. Pharm. Pharmacol.*, 1959, **11**, Suppl. 275T.
3. Bruce, *Nature, Lond.*, 1960, **188**, 147.
4. Foy and Parratt, *J. Pharm. Pharmacol.*, 1960, **12**, 360.