

## LETTERS TO THE EDITOR

### Autacoids in sputum in cases of bronchial asthma and other respiratory diseases

There is much evidence to suggest that pharmacologically active mediators may be involved in production of the asthmatic state. Such mediators were thought likely to be present in sputum, and analysis of sputum might therefore offer direct evidence of their release. The sputum from 79 cases of bronchial asthma during the acute attack and from 44 cases of other respiratory disease was, therefore, examined for the presence of histamine, 5-HT, bradykinin and acetylcholine. The collection of sputum normally had to precede the institution of therapeutic measures, and thus severe cases were excluded from the series. Sputum was collected directly in 10% trichloroacetic acid solution for extraction of histamine and 95% acetone for extraction of 5-HT (Parratt & West, 1957). The specificity of the extraction was further checked by the procedures outlined by Schild (1949). Bradykinin was assayed on rat duodenum and atropinized rat uterus after extraction with a mixture of 95% ethanol in de Jalon solution (Schacter & Morley, 1964; Sardesai, 1968). Sputum was collected in ice cold eserized Ringer for assay of acetylcholine on frog rectus (Anand, 1952).

Histamine was detected in sputum in 65 cases of bronchial asthma (82.2% of cases) and the amount varied between 0.10–0.49  $\mu\text{g/g}$  of sputum. In 28 cases, examination of the sputum on consecutive days revealed that there was a progressive reduction in the amount of histamine simultaneously with clinical recovery.

The highest amounts of histamine  $0.84 \pm 0.354 \mu\text{g/g}$  were present in sputum of 6 cases of lung abscess. Moderate amounts were present in carcinoid syndrome ( $0.32 \mu\text{g/g}$ ), in 13 cases of pulmonary tuberculosis ( $0.26 \pm 0.122 \mu\text{g/g}$ ) and in one case of tropical eosinophilia ( $0.20 \mu\text{g/g}$ ). Histamine was not detected in patients with bronchiectasis, pneumothorax and congestive cardiac failure.

Apart from a faint trace (2 ng/g) in a patient with lung abscess, 5-HT was not detected in any instance. Bradykinin was present in the sputum in one case of chronic bronchitis and in four out of 6 cases of bronchial asthma; the sputum from other 2 patients contained histamine only. Acetylcholine was not detected in any sample from the 12 cases of bronchial asthma.

Thus there is a direct evidence of the presence of histamine and bradykinin in the respiratory tract in cases of bronchial asthma.

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March 18, 1970

#### REFERENCES

- ANAND, B. K. (1952). *Am. J. Physiol.*, **168**, 218–225.  
PARRATT, J. R. & WEST, G. B. (1957). *J. Physiol., Lond.*, **137**, 179–192.  
SARDESAI, V. M. (1968). *Can. J. Physiol. Pharmac.*, **46**, 77–79.  
SCHACTER, M. & MORLEY, J. (1964). In *Pharmacometrics*, Editors: Laurence, D. R. & Bacharach, A. L., pp. 627–647. London: Academic Press.  
SCHILD, H. O. (1949). *Proc. Roy. Soc. Med.*, **42**, 623–625.