layer was extracted with two 40-ml. portions of ethyl acetate. The combined organic layers were washed with 50 ml. water, dried (magnesium sulfate), and concentrated to dryness *in vacuo* to give 3.10 g. of the acid. To the acid was added 50 ml. 48% HBr. The mixture was stirred and refluxed for 2.25 hr. and then allowed to stand at room temperature for 15 hr. The solid was filtered and washed with two 5-ml. portions of 48% HBr. The fitrate and washings were combined and concentrated to dryness *in vacuo*. To the residue was added 10 ml. water and a few drops of sulfur dioxide–water. The solution was warmed, decolorized, and filtered. The filtrate was cooled, adjusted to pH 5 (pH paper) with concentrated ammonium hydroxide, and stored in the refrigerator for 2 days. The solid was filtered, washed with two 10-ml. portions of absolute ethanol, and air dried to give 0.52 g. (40%) of I; $[\alpha]_D^{25°}$ −11.15° (concentration 2%, 1 *N* HCl). An analytically pure sample of I was isolated from velvet bean extract by the literature method (4); $[\alpha]_D^{25°}$ (obs.): −11.62° (concentration 2%, 1 *N* HCl), (lit.): −12.0° (concentration 1%, 4% HCl). The product exhibited an IR spectrum identical to that of an authentic sample of I. Amino acid analysis indicated the purity of the product to be 97%.

REFERENCES

(1) K. Vogler and H. Baumgartner, *Helv. Chim. Acta*, **35**, 1776 (1952).

(2) W. J. Gottstein and L. C. Cheney, *J. Org. Chem.*, **30**, 2072 (1965).

(3) Y. Sugii, *J. Pharm. Soc. Japan*, **468**, 130(1921); through *Chem. Abstr.*, **15**, 22818(1921).

(4) R. R. Sealock, in "Biochemical Preparations," vol. I, H. E. Carter, Ed., Wiley, New York, N. Y., 1949, pp. 25–27.

ACKNOWLEDGMENTS AND ADDRESSES

Received April 28, 1972, from the *Chemistry Division, Norwich Pharmacal Company, Norwich, NY 13815*

Accepted for publication May 30, 1972.

Thanks are expressed to Mr. Alexander Winterstein for the preparation of intermediates, Mr. Donald Adair for the optical rotation measurements, Mr. Gordon Ginther for the amino acid analysis, and Mr. Grant Gustin for the microanalytical data.

▲ To whom inquiries should be directed.

COMMUNICATIONS

Existence of a Vagosympathetic Pressor Reflex in the Dog

Keyphrases ☐ Central vagal stimulation—vagosympathetic pressor reflex, dogs ☐ Vagosympathetic pressor reflex—response to central vagal stimulation, sympathetic efferents *versus* vagal afferents, dogs

Sir:

It has been substantiated by many workers, among whom may be mentioned Chapman *et al.* (1) and Tansy *et al.* (2), that central vagal stimulation at the cervical level in the bilaterally vagectomized dog invariably produces a definite and constant elevation in arterial pressure with no change in the pulse rate or ECG.

From these reports it was to be assumed that the pressor response to central vagal stimulation in the dog results from vagal afferent activity. In a recent report, Pedersoli (3) concluded, however, that the pressor response was mediated solely by simultaneous stimulation of the sympathetic fibers which are fused into the common trunk with the vagus nerve in the cervical region of the dog. We, therefore, subjected this question to further examination.

Acute experiments were conducted in 12 fasted mongrel dogs to determine the afferent pathway which subserves the arterial pressor response to central stimulation of the vagosympathetic trunk. After an overnight fast, anesthesia was induced with sodium thiopental (20 mg./kg. body weight) and maintained with a mixture of chloralose–urethan (25 and 250 mg./kg. body weight, respectively). In all preparations, the vagus was surgically separated from its sympathetic component by locating the superior cervical ganglion and dividing the common sheath holding together the sympathetic efferent nerves and the vagus. The dissected right and left vagosympathetic trunks were sectioned in the neck and prepared for cephalad stimulation as described by Taylor and Page (4).

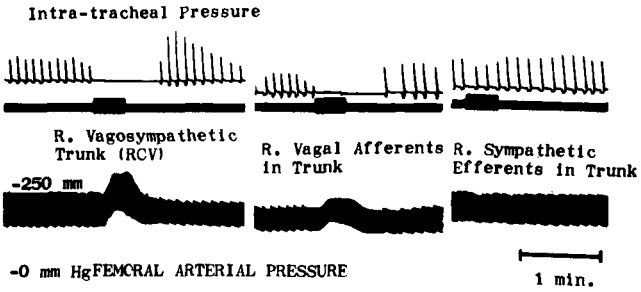


Figure 1—*Polygram sections showing arterial pressure and respiratory responses to electrical stimulation of the cut cephalic end of the entire right vagosympathetic trunk of the dog, the vagal portion of the same trunk, and the peripheral sympathetic component.*

The cephalic end of the divided vagosympathetic trunk, its vagal afferent, and sympathetic efferent components were stimulated with monophasic square wave pulses, using pressor parameters described by Feldman (5). The stimuli consisted of monophasic square wave pulses, with a frequency range of 30–60 Hz., a duration of 1 msec., and voltages of 10–40 v. Absolute current flow was measured using voltage drop determination across a precision resistor of known value in series with

the stimulating electrodes. Respiration and arterial pressure were charted on a direct-writing polygraph.

In all bilaterally vagectomized dogs, centripetal electric stimulation (0.1–0.3 ma.) of either vagosympathetic trunk at the cervical level always resulted in a systemic arterial pressor response and apnea. In Fig. 1, it can be seen that vagal afferent stimulation similarly produced a rise in the femoral arterial pressure, whereas stimulation of the peripheral end of the sympathetic portion of the trunk with comparable stimulus parameters had no effect on the systemic pressure. The apnea induced by vagal afferent stimulation was absent on stimulation of the sympathetic efferents. A functional verification of the nature of the fiber groups is also afforded by the fact that this same stimulus produced dilatation of the ipsilateral pupil only when applied to the fiber bundle that was visually specified to be the afferent portion and that subserved the pressor response. This latter observation is in complete accord with the classical findings of Harper *et al.* (6).

In view of the anatomical isolation of the sympathetic fibers produced in the cervical regions of our dogs, the conditions were not present for the effectation of sympathetic influences in the blood pressure. Therefore, it is concluded that the pressor response to central vagosympathetic trunk stimulation in the dog is *via* the vagal afferent and not the cut end of the sympathetic efferent. This conclusion is supported by the recent publication (7) in which polygram sections depicted that electrical stimulation of the cephalic end of the dorsal and/or ventral abdominal vagus in the dog raised the femoral arterial pressure and that this response was abolished by surgical interruption of the vagal afferents at the cervical level. Application of the same stimulus to the proximal end of the cut cervical vagus produced the pressor response induced by central stimulation of the abdominal vagi prior to section. In sum, it is concluded that both the apneic and arterial pressor responses to central vagal stimulation are reflexes subserved by afferent limbs within the vagi and not the cut ends of the sympathetic element.

(1) W. P. Chapman, E. W. Wilkins, and E. Von Hueber, *Surg. Gynecol. Obstet.*, **98,** 353(1954).
(2) M. F. Tansy, R. C. Mackowiak, and M. H. F. Friedman, *ibid.*, **127,** 259(1968).
(3) W. M. Pedersoli, *Pharmacology*, **4,** 120(1970).
(4) R. D. Taylor and I. H. Page, *Amer. J. Physiol.*, **170,** 321 (1952).
(5) R. G. Feldman, *Acta Neuroveg.*, **25,** 134(1962).
(6) A. A. Harper, B. A. McSwiney, and S. F. Suffolk, *J. Physiol. (London)*, **85,** 267(1935).
(7) M. F. Tansy, R. C. Mackowiak, and R. B. Chaffee, *Surg. Gynecol. Obstet.*, **133,** 225(1971).

MARTIN F. TANSY▲
F. M. KENDALL
Department of Physiology and Biophysics
Temple University Schools of Dentistry and Pharmacy
Philadelphia, PA 19140

Received May 4, 1972.
Accepted for publication June 28, 1972.
Supported by Grant AM-11372 from the National Institute of Arthritis and Metabolic Diseases, U. S. Public Health Service.
▲ To whom inquiries should be directed.

Cryptopleurine, an Active Antiviral Alkaloid from *Boehmeria cylindrica* (L.) Sw. (Urticaceae)

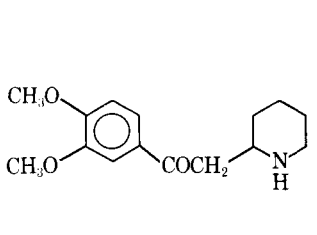
Keyphrases ☐ *Boehmeria cylindrica* (L.) Sw.—antiviral alkaloidal extract ☐ Cryptopleurine—isolation from *Boehmeria cylindrica*, antiviral activity ☐ Medicinal plants—isolation of cryptopleurine from *Boehmeria cylindrica*, antiviral activity ☐ Antiviral activity—cryptopleurine from *Boehmeria cylindrica*

Sir:

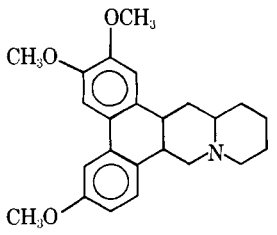
As a result of a screening effort to determine the biological effects of native plants, a defatted ethanol extract of *Boehmeria cylindrica* (L.) Sw.[1] was found to exert a marked inhibitory effect against several viruses in tissue culture experiments. Concurrently, similar extracts were shown to elicit a significant cytotoxic effect against Eagle's 9 KB carcinoma of the nasopharynx in cell culture (1). Subsequent phytochemical studies resulted in the isolation of three alkaloids, one of which was identified as 3,4-dimethoxy-ω-(2′-piperidyl)acetophenone (I). The others were cryptopleurine (II) and a base, obtained in very small amounts, which was suggested to be the secophenanthroquinolizidine (III). Only II was obtained in sufficient quantity for biological testing, and it was found to be highly active against the 9 KB carcinoma, exhibiting an ED_{50} of 7.8×10^{-4} and 2.6×10^{-5} mcg./ml. in replicate tests (1).

At this time we would like to report that II is also responsible for at least a part of the antiviral activity observed in tests with crude extracts of *B. cylindrica*.

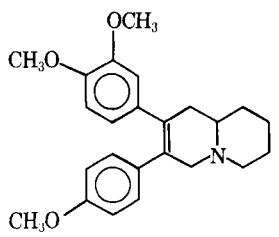
Cryptopleurine (4.5 mg.) was dissolved in 10.0 ml. of 1% (w/v) citric acid aqueous solution. Enough distilled water was added to an aliquot of 0.1 ml. of this alkaloid concentrate to make 100 ml. In this way, Solution A (4.5×10^{-3} mcg./ml.) was prepared for testing.



I



II



III

[1] Authentication of the plant material yielding II was previously reported (1).