

liali dei vasi, cellule che estemporaneamente partecipano delle funzioni del S.R.I.

Uno di noi, ZACCO¹, ha riscontrato, in rapporto a diverse condizioni sperimentali: iniezione locale di istamina, di papaina, di un antigene (previa sensibilizzazione locale mediante trasporto passivo), imponente reazione istiocitaria del polmone di cavia; l'uso preventivo di un prodotto antiistaminico di sintesi inibisce in maniera apprezzabile la reazione mesenchimale da papaina.

M. ZACCO e C. FERRARA

Istituto di Clinica Medica dell'Università di Bari, il 18 giugno 1949.

Zusammenfassung

Die Autoren bestimmen den Histamingehalt von Meerschweinchenlungen nach Anlegung eines Pneumothorax, nach lokaler Reizung mit Papain und bei normalen Kontrolltieren.

Der Histamingehalt sinkt zunächst sofort nach Herstellung eines Pneumothorax, steigt aber nach einigen Stunden wieder an und bleibt während mehrerer Tage über den Normalwert erhöht.

Die Reizung der Lunge durch eine lokale Injektion von Papain gibt, ähnlich wie der Pneumothorax, eine nach einiger Zeit auftretende Erhöhung des Histamingehalts.

¹ M. ZACCO, *Fisiologia e Medicina* 10, in corso di stampa (1949).

Antihistaminic Substances and Epinephrine Action on Blood Pressure

At present there is no generally accepted opinion as regards the influence of antihistaminic drugs on the action of epinephrine on blood-pressure (cf. for instance LOEW¹. Recently GRAHAM² has shown that in the spinal cat high doses of Neoantergan inhibit the pressor response to epinephrine. The author has studied the blood-pressure of unanesthetized rats with the technique developed by KERSTEN³ and coworkers. It was possible to demonstrate that Neoantergan in doses of 10 mg/kg body-weight enhanced the pressor response to epinephrine, whereas doses of 50 mg/kg entirely abolished it. In additional experiments it was shown that Antastene in doses of 50 mg/kg inhibited the pressor response to epinephrine in unanesthetized rats and guinea-pigs. Further work on this subject is in progress with the possibility in mind that the effect could be explained as a competitive inhibition between inhibitors.

L. B. LÖFGREN

Institute of Physiology, University of Uppsala, Sweden, July 13, 1949.

Zusammenfassung

Bei nichtnarkotisierten Ratten verstärken kleine Dosen von Neoantergan die Adrenalinwirkung auf den Blutdruck. Andererseits sieht man, daß große Neoantergandosen diese Blutdrucksteigerung ganz verhindern. Bei nichtnarkotisierten Ratten und Meerschweinchen eliminieren große Dosen von Antastene die Adrenalinwirkung auf den Blutdruck. Die Beobachtung wird an anderer Stelle ausführlicher geschildert werden.

¹ E. R. LOEW, *Physiol. Rev.* 27, 542 (1947).

² J. D. P. GRAHAM, *J. Pharmacy Pharmacol.* 1, 17 (1949).

³ H. KERSTEN, W. G. BROSENE, JR., F. ABLONDI, and Y. SUBBAROW, *J. Lab. Clin. Med.* 32, 1090 (1947).

On the Influence of Temperature on the HCl-formation and the Oxygen Consumption of the Stomach

Experimental determinations of the hydrochloric acid secretion rate of the stomach and the accompanying oxygen consumption have received considerable attention in recent years in connexion with discussions on the mechanism of the HCl production¹⁻⁵. So far no conclusive results have been obtained as to a possible quantitative relationship: TEORELL¹ (cat's stomach) anticipates one, but points out that under his conditions the thermodynamic "efficiency" was too low, a fact which tends to obscure a possible relation. DAVIES⁵ (isolated frog's stomach) finds an increase in Q_{O_2} after histamine stimulation (l. c. Fig. 3) but records only two cases with concomitant HCl determinations (l. c. Table 4). The present note intends to contribute to these problems by measurements of the temperature influence upon the factors in question, i. e. the rate of HCl production and the related O_2 consumption.

Isolated frog's stomach mucosa was used and the technique was in principle the same as described previously^{3, 5, 6}, with provisions added for good temperature control. The HCl secretion was received in a small volume of 0.1 N NaCl and the rate of H^+ ion secretion measured from continuous p_H -time records (glass electrode). The conventional gasometric procedure for oxygen consumption (Q_{O_2}) was employed: immediately after a well-established, constant secretion period (induced with histamine) the mucosa piece (c. 10 mg) was transferred to the Warburg apparatus in frog's phosphate-saline + 100% O_2 . Secretion tests and gasometric analyses were performed on each of a total of 25 mucosa membranes in groups of four to six experiments at 15°, 20°, 25°, 28° and 33°C, respectively.

The temperature influence on the HCl secretory rate, respectively the Q_{O_2} , was expressed in terms of the customary Arrhenius-van't Hoff equation⁸

$$\log K_T = -\Delta E / (4.575 T) + C \text{ (a constant)}$$

derived from a plot of $\log K_T$ against $10^3/T$. K_T is $[H^+]$ or $[Q_{O_2}]$ and $T = (273 + C^\circ)$. The best fit of the experimental point groups was calculated as a straight "regression line" according to usual statistical methods⁹. The temperature effect on the respective rate is here determined by $-\Delta E$ calories/mole, the "energy of activation".

The results are summarized in the following table.

The Temperature Coefficient: A common way of expressing the influence of temperature is the use of the "temperature coefficient", Q_{10} . It can, for the temperature interval 15°–25°C, be rather exactly calculated as $\text{antilog}^{10} (25.3 \times 10^{-6} \cdot \Delta E)$. Hence Q_{10} for the H^+ secretion is 3.2 (probable variation limits 2.8–3.8) and Q_{10} for the O_2 -consumption is 2.2 (limits 2.0–2.4). The ΔE 's, respectively the Q_{10} 's, found are of the order generally found for chemical processes¹, but the exact significance

¹ T. TEORELL, *Skand. Arch. Physiol.* 66, 225 (270) (1933).

² C. LUTWAK-MANN, *Biochem. J.* 19, 19 (1947).

³ R. E. DAVIES, N. M. LONGMUIR, and E. E. CRANE, *Nature* 159, 468 (1947).

⁴ E. E. CRANE and R. E. DAVIES, *Proc. Biochem. Soc.* (24 Sept. 1948).

⁵ R. E. DAVIES, *Biochem. J.* 42, 609 (1948).

⁶ T. TEORELL and R. WERSÄLL, *Acta physiol. Scand.* 10, 243 (1945).

⁷ Above 33°C heat damage starts.

⁸ See for instance: H. BULL, *Physical Biochemistry*, p. 23 (New York, 1943). – A. KANITZ, *Temperatur und Lebensvorgänge* (Berlin 1915). – Y. BELEHRÁDEK, *Temperature and Living Matter* (Berlin, 1935).

⁹ A. C. WORTHING and J. GEFFNER, *Treatment of Experimental Data*, Chap. XI, XII (New York, 1943).