REVISTA ESPAÑOLA DE FISIOLOGIA, 27, 375-376. 1971

CARTA AL EDITOR

Effect of Dicumarol on the Intestinal Absorption of D-mannose and D-xylose *

In vivo experiments, PONZ and LLUCH (3) observed that dicumarol inhibits the active transport of glucose through rat intestine and increases the arabinose absorption.

Recently ANSELMI *et al.* (1) showed by an *in vitro* intestinal preparation, that dicumarol inhibits the active transport of D-galactose and increases the difusion of L-arabinose, whereas under the same conditions has no effect on the urea diffusion.

In view of these observation, the effect of dicumarol on the intestinal absorption of D-mannose and D-xylose has been investigated, the description of which constitutes this work.

White Wistar rats weighing 150-200 g, fasted for 24 hour, were used. The animals were anesthetized with urethane, and the small intestine was exposed by midline laparatomy. Everted sacs 3 cm long were prepared from the middle portion of the small intestine following the *in vitro* technique of WILSON and WISEMAN (5). The sacs, filled with 0.3 ml of serosal fluid, were placed in 20 ml Warburg flasks, each containing 4 ml mucosal fluid. The mucosal and serosal fluids were taken from a 1,000 ml prepared saline solution, composed of 5.746 g or NaCl; 0.354 g of KCl; 0.162 g of KH_2PO_4; 0.294 g of $MgSO_4 7H_2O$; 1.971 g of $Na_2HPO_4 2H_2O$; 0.488 g of $Na_2HPO_4 2H_2O$; and recently boiled distilled water. Both the sugars and dicumarol were added only to the mucosal fluid and their initial concentrations in this fluid were 50 mM and 5×10^{-5} M respectively. The duration of each experiment was 60 minutes during which the flasks maintained in a water bath at 37° C, were shaken at 90 oscillations/minute with an amplitude of 3 cm. Following these experiments the oxygen uptake in the intestinal sacs and the sugar concentrations in the mucosal and serosal fluids were measured. Oxygen consumption is expressed in micromoles per 100 mg of wet tissue. The mean value of the tissue's water content was (83.0 ± 0.7 %). Net sugar transference from the mucosal side to the serosal side is expressed in μM/100 g of wet tissue.

Table I indicates that dicumarol, at a 5×10^{-5} M concentration in the mucosal

* This work has been supported in part by «Ministerio de Educación y Ciencia».

Table I. *The effect of dicumarol on the transference of D-mannose and D-xylose (at an initial concentration of 50 mM) in everted sacs made from the small rat intestine.* Absorption time 60 minutes. The values are accompanied by the average standard error.

N.º exp.	Dicumarol [M]	Sugar transference from the mucosal to the serosal fluid µM/100 mg initial w.w. tissue		O_2 uptake µM/100 mg of w.w. tissue
		D-Mannose	D-Xylose	
9	—	2.17±0.26	—	5.92±0.18
9	5×10^{-5}	4.02±0.44	—	3.90±0.31
10	—	—	3.42±0.30	5.33±0.35
10	5×10^{-5}	—	4.75±0.27	4.25±0.28

fluid, inhibits the oxygen consumption of the intestinal sacs and increases the D-mannose and D-xylose transference.

In other experiments, the influence of dicumarol on the sugar transference was determined when it was present only in the serosal fluid. For this case no statistically significant influence on said transference was observed when the sugars were initially present either in the mucosal or serosal fluids.

The arabinose diffusion increases previously indicated (1) as well as that of D-mannose and D-xylose noted in this present work, coincides with the sorbose, ribose and fructose diffusion increase establisshed by WILSON and VINCENT (4), in anaerobie conditions, and also to that of L-arabinose and L-xylose under the influence of dietilstilbestrol as reported by HERREROS and others (2).

References

1. ANSELMI, E., JORDANA, R. and LARRALDE, J.: *R. esp. Fisiol.*, 26, 325, 1970.
2. HERREROS, B., BARBOSA, E., OJEDA, J. L. and BOSQUE, P. G.: *Experientia*, 26, 518, 1970.
3. PONZ, F. and LLUCH, M.: *R. esp. Fisiol.*, 24, 203, 1968.
4. WILSON, T. H. and VINCENT, T. N.: *J. Biol.*, 216, 851, 1955.
5. WILSON, T. H. and WISEMAN, G.: *J. Physiol.*, 123, 116, 1954.

E. ANSELMI
J. LARRALDE

Department of Animal Physiology
University of Navarra
Pamplona (Spain)

(Received on July 19, 1971)