79 EFFECT OF D-XYLOSE ON ACTIVE SODIUM TRANSPORT IN ISOLATED RABBIT INTESTINE

Nicole Bertrand, Monique Chevrot, J.J. Robert, and J.F. Desjeux INSERM U 83, Department of Pediatrics /Pr. H. LESTRADET/ and Department of Biochemistry /Pr. J. AGNERAY/, Hópital Hérold - 75019 PARIS.

One hour blood xylose screening test is often used as a measure of monosaccharide absorption in intestinal malabsorption. Glucose transport is known to be coupled with Na transport; therefore the effect of xylose and glucose on active Na absorption was determined by measurement of short circuit current /Isc/ on adjacent pieces of rabbit intestine /J.Gen.Physiol. 47 : 567,1964/. Glucose /1 to 40 mM/ stimulated Isc. The maximum increase, Δ Isc, was 0.80 ueq/hr cm2 in ileum and 0.56 ueq/hr cm2 in jejunum. In contrast, xylose /10 to 40 mM/ did not significantly increase Isc /Δ Isc=0/. The addition of glucose /1 to 40 mM/ to the intestine previously exposed to 40 mM xylose stimulated Isc. These results indicate that xylose does not stimulate active Na absorption. They further suggest that the decrease of xylose absorption in some malabsorptions may not be directly related to a decrease of active transport on monosaccharides.

80 N^{ε}-/1-DEOXYFRUCTOSYL/-LYSINE IN URINE AFTER INGESTION OF A LACTOSE FREE, GLUCOSE CONTAINING MILK FORMULA

A. Niederwieser[+], P. Giliberti[+] and A. Matasovic[+]/Intr. by W. Hitzig/ University Children's Hospital, Zürich, Switzerland.

For some time we were intrigued by an unknown compound appearing on amino acidschromatograms of urine from patients receiving a lactose free evaporated milk in which lactose had been replaced by glucose. The unknown substance was isolated by ionexchange chromatography and identified as N^{ε}-/1-deoxyfructosyl/-lysine /$^{\varepsilon}$dFrclys/ by chemical degradation, elemental analysis, field desorption mass spectrometry, and chromatographic comparison with the synthetic reference compound. $^{\varepsilon}$dFrcLys, an Amadori product, was bound to the protein of this particular milk in a concentration of about 2 g per 100 g milk protein. It has practically no nutritional value since about 16 % were excreted as intact dFrcLys in urine and about 55 % in faeces.

81 THE EFFECT OF RH FETO-MATERNAL INCOMPATIBILITY ON ABO INCOMPATIBILITY

G. Jovenitti, F. Gloria, R. Talamo, L. Capotto, P. Briscolini, L. Tucciarone, E. Carapella, M. Orzalesi, and E. Bottini Dept. of Genetics, Dept. of Pediatrics, University of Rome, Italy.

It has been recently shown that Rh incompatibility /inc./ protects from the damaging of ABO inc.. It is possible that this protection is different depending upon the fetal ABO phenotype. To test this possibility we have studied two consecutive series of white newborn infants, one from New Haven /1027/ and one from Rome /631/. In both population the incidence of carriers of I^B allele was significantly higher among infants incompatible with their mothers in both ABO and RH systems than among infants incompatible only in the ABO system /$p < 0.001$/. Furthermore I^B carriers with both ABO and RH inc. had a birth weight higher than I^B carriers with ABO inc. alone. These results suggest that in the case of feto-maternal ABO inc. the presence of Rh inc. exerts a preferential protective actione on I^B carriers. This work was supported by NATO G.554.

82 POSSIBLE COUPLING BETWEEN NA AND GLUCOSE ABSORPTIONS IN JEJUNAL MUCOSA OF CHILDREN.

J.F. Desjeux INSERM U 83, and Department of Pediatrics, Hopital Hérold, 75019 PARIS.

It has been postulated that Na and glucose are coupled to be absorbed by intestinal mucosa of animals. However, very little is known about intestinal mucosa of children. In a first group of experiments, the steady-state accumulation of glucose was determined on adjacent pieces of jejunum as a function of Na concentration gradient between cell and bathing solution. In Ringer solution /Na=140 meq/l; glucose 1 mM/ the intracellular Na concentration, [Na] c, was 29 meq/l and glucose c 25 mM. After exposure to 10^{-4} M ouabain, [Na]c was 82 meq/l and [glucose] c 6 mM. After incubation with Na free medium glucose c was 1,9 mM. In a second group of experiments, the transepithelial Na absorptive process was determined by reading short circuit current, Isc, as a function of glucose concentration. Glucose was found to stimulate Isc and Isc to be a saturable function of glucose concentration. These partial results support the concept of a coupling between Na and glucose absorptions in jejunum mucosa of children.

83 DEVELOPMENTAL ASPECTS OF LYSINE TRANSPORT BY RAT INTESTINE

C.S. Bartsocas[+] /Intr. by Prof. C.Papadatos/ 2nd Dept. of Pediatrics, University of Athens School of Medicine, Athens, Greece.

L-lysine-^{14}C uptake was studied in vitro in intestinal segments of rats, in various ages, ranging between 15-day fetuses and adults. L-lysine in 0.065mM concentration was accumulated against a chemical concentration gradient by processes which obeyed saturation kinetics. There appeared to be 2 peaks of lysine uptake values, one in the fetus, diminishing by the 17th fetal day and another the 2nd postnatal day. Fetal transport of lysine was not inhibited by anaerobic conditions and was not Na^+ dependent in contrast with increasing O_2 and Na^+ dependence postnatally. A series of aminoacids including representatives of the neutral, iminoacid and dibasic groups, failed to inhibit lysine uptake, with the exception of L-arginine, which was also antagonized by L-lysine. These findings suggest that in the rat intestine L-lysine is transported by at least 2 mechanisms, one fetal, not requiring O_2 and Na^+, and another developing postnatally with a peak during the 2nd day, which is Na-dependent and requires aerobic conditions. /With the support of grants from the Embeirikeion Foundation, the National Research Foundation and the American Philosophical Society/.

84 NEONATAL SCREENING FOR HYPOTHYROIDISM WITH T4 RIA

W. Lukas, J. Vidnes and S. Halvorsen I.Klinika Pediatrii Slaskiej Academii Medycznej, Zabrze, Poland, Ped. Dept. Ullevál Hospital and Pediatric Research Institute, Rikshospitalet, Oslo Norway.

Screening programs for hypothyroidism are highly wanted and technically possible. In Norway serum is used for PKU screening. The T4 RIA of Dunn and Foster was modified for 10 ul serum. The stability of T4 during transport is, however, low. Standing at room temperature there is a 5-10 % decay per 24 hours. Another problem is T4 variations during intercurrent diseases. In premature infants without RDS T4 was slightly lower /8.9 ul/100 ml/ than in fullterm /9.9/ while prematures with RDS have low mean levels /4.5/ and some definite hypothyroid values. In some prematures the levels were within normal range before the distress started, suggesting that this is an adaptive process and not related primarily to the cause of RDS as previously suggested. It is important to define conditions with low T4 levels in newborn before large scale screening is introduced.