● COMPARISON OF ^{14}C-UREA BREATH TEST, MICROBIOLOGY AND HISTOLOGY FOR THE DIAGNOSIS OF CAMPYLOBACTER PYLORI B.J. Marshall, R.L. Guerrant, M.W. Plankey, K.R. Dye, L. Barrett, H.F. Frierson, S.R. Hoffman, R.W. McCallum. Dept. Internal Med., Gastroenterology and Geographic Medicine, University of Virginia, Charlottesville 22908.

C.pylori may be diagnosed by histology, Gram-stain, culture, or biopsy urease test; or non-invasively by the urea breath test. In this study our goal was to compare these 4 methods in a consecutive series of endoscopies. Patients stopped ulcer therapy for 12 hours prior to the tests. At endoscopy mucosal biopsies were taken from the antrum for urease test (CLOtest), culture and histology (x2); and from the body of the stomach for histology (x2). C.pylori positive (CP+) patients were defined as those who had a positive culture, or in whom spiral organisms were seen on Giemsa stained sections. C.pylori negative (CP-) cases had no spiral organisms detected on any biopsy. For the breath test fasting patients were given 10uCi ^{14}C-urea and breath samples were collected for 30 minutes (Marshall BJ J.Nuc.Med.1988;29(1)). To be included for analysis patients had to have at least one adequate specimen for histology, and one other test. RESULTS: Specimens were taken at 147 endoscopies. Histology result is only given for patients who had both body and antrum biopsies:

Test	Total	TrueCP+	Sens.%	Specif.%
Ant.Bx.	106	42	88	100
Body Bx	106	42	83	100
Gram	105	45	69	100
Cult.	122	53	70	100
CLOtest	75	38	89 75% in 15'	100
Breath	85	52	89	94

All tests were less reliable in patients with intestinal metaplasia. In only 2 patients was C.pylori present in the body but not the antrum. Culture fared less well because only one antral biopsy was sent wheras the histologist was given duplicate samples. We conclude that an efficient method to diagnose C.pylori at endoscopy involves a CLOtest and histological examination of biopsy specimens. The ^{14}C urea breath test is a sensitive noninvasive method of diagnosis.

● STUDY OF HUMAN PANCREATIC JUICE : EVIDENCE FOR A DUCTAL PROTON SECRETION.

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The objective of this work is to find out if pancreatic juice modifications during storage in pancreatic ducts are likely to play a role in the formation of pancreatic stones. The study is based on data obtained from 14 patients whose pancreatic juice was obtained by ERCP for diagnostic purposes but were found to have no recognizable pancreatic disease. Pancreatic juice was collected anaerobically every minute, during 20 minutes immediately after I.V. secretin (S) : 1 U/kg followed by I.V. caerulein (C) 75 ng/kg 10th min of collection. PCO_2, pH, proteins, HCO_3, total calcium were measured by standard methods. Ionized calcium concentration was measured with a Radiometer ICA 1 calibrated for low Ca^{++} concentrations. Saturation of juice with calcium carbonate (SI) was calculated (1). The results (mean ± SD) obtained in the first sample (washed out juice) were significantly different from those obtained after stimulation : pCO_2 (93.1 ± 33.2 vs 41.2 ± 4.1 (S) or vs 36.4 ± 7.8 (C) mm Hg) and Ca^{++} (0.3 ± 0.04 vs 0.093 ± 0.017 mM) were higher. pH HCO_3 SI (3.2 ± 0.9 vs 9.0 ± 1.9) were lower. In the washed out samples, there was a linear relationship between protein concentration and pCO_2 (r^2 = 0.65). There was on the contrary a negative linear relationship between protein and HCO_3 r^2 = 0.72. These results are consistent with the following conclusions : 1. During interdigestive periods there is a concentration of pancreatic juice which is associated with a luminal H^+ secretion and therefore CO_2 production from protonated bicarbonate. This suggests that a Na^+ - H^+ exchange takes place at the level of luminal membrane of duct cells and explains, at least in part, the concentrative process in pancreatic ducts. 2. Concentration decreases the supersaturation of juice with calcium carbonate. Disturbance of H^+ secretion represent a new mechanism which has to be considered in the pathogenesis of chronic calcifying pancreatitis.

(1). Moore E.W. and Vérine H.J. J. Lab. Clin. Med. 106, 611- 618, 1985

● ROLE OF THE MICROBIAL LACTASE ACTIVITY FROM YOGURT ON THE INTESTINAL ABSORPTION OF LACTOSE : AN IN VIVO STUDY IN LACTASE-DEFICIENT SUBJECTS. P. Marteau, B. Flourié, C. Franchisseur, P. Pochart, J.F. Desjeux, J.C. Rambaud. INSERM U.290, Hôpital Saint-Lazare, 75010 Paris, France.

The better absorption of lactose in yogurt (Y) than in heated yogurt (HY) or milk, as shown by the hydrogen breath test, has been related to the intraintestinal digestion of lactose by the microbial lactase. However, the precise extent at which lactose in Y and HY is non absorbed by the small intestine and the fate of Y microbial lactase beyond the duodenum are unknown. In this study, we assessed in man the role of lactase from Y on lactose absorption by direct measurement in the ileum. We studied 8 volunteers identified as being malabsorbers to 50 g oral lactose load by the breath hydrogen test. After orocecal intubation, fasting subjects ingested in a random order on 2 consecutive days either Y or HY containing 18 g lactose, 30 µCi 14C PEG and 10^8 spores as meal and bacterial markers, respectively. Microbial lactase (ONPG) was 1.7 ± 0.2 in Y and 0.3 ± 0.1 IU (m ± SEM) in HY. The pH of ileal fluid and the flow rates of 14C PEG, lactose, lactase and spores were measured in the terminal ileum during 9 h after meals using constant slow infusion of PEG 4000. Results : Ileal pH did not change after both meals. After Y and HY, the mean percentages of 14C PEG recovered were respectively 96 ± 3 and 96 ± 3 ; the mean percentages of spores were respectively 99 ± 10 and 95 ± 12. Mean amounts of lactose and lactase recovered from the terminal ileum were :

Meal	Lactose (g)		Lactase (IU)	
Yogurt	1.74 ± 0.26	$p < 0.01$	191.6 ± 37.7	$p < 0.01$
Heated yogurt	2.82 ± 0.46		47.8 ± 7.7	

The time-courses of lactose and 14C PEG in the terminal ileum were roughly the same as those of lactase and spores. Conclusions : Lactose in Y is effectively absorbed by the small intestine of lactase-deficient subjects. Destroying lactase by heating significantly reduces lactose absorption. However, the level of lactose absorption after HY ingestion remains high, suggesting that microbial lactase present in Y is not the sole factor to explain why lactose in Y is better digested by the human small intestine than lactose in milk.

LEUKOTRIENE B4 IN GASTRIC AND DUODENAL DISEASE

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Leukotriene B4 (LTB4) is one of the products of arachidonic acid metabolism which locally mediates important steps of inflammation. It could therefore play a role in gastric and duodenal diseases where inflammation is present. We measured the levels of LTB4 in mucosal biopsies of gastric antrum and duodenum from 7 control subjects, from antrum with endoscopic evidence of gastritis (7) and duodenum with ulcer or erosive duodenitis (5). Biopsies were homogenized, LTB4 extracted and measured by specific radioimmunoassay. Apparently normal gastric antrum contained 1325 ± 331 pg of LTB4/mg of protein ± SE, while in gastritis the mean content was slightly higher, 1634 ± 243. Normal duodenum contained 675 ± 122 pg, while mucosa from the margins of uodenal ulcer and mucosa with duodenitis had a significantly higher content: 1772 ± 434 and 5583 ± 416 pg of LTB4 rispectively, $p < .01$ vs controls (Wilcoxon's test). We conclude tha LTB4 mucosal levels are significantly elevated in duodenal ulcer and duodenitis, while in gastritis their elevation is less evident. These data support the hypothesis that LTB4 play a pathophysiologic role in gastric and duodenal diseases where inflammation is a feature and suggest future therapeutic trial of drugs which selectively inhibit the lipoxygenase pathway of arachidonic metabolism.