against spontaneous denaturation as was found in the case of the muscle enzyme[4]. These data, in agreement with previous observations showing the lower affinity of yeast enzyme for NAD[7], suggest that the binding of the coenzyme is different in the two enzymes.

The failure to prevent N-acetyl yeast enzyme formation by the coenzyme indicates that the lysine residue cannot serve as a binding site for NAD. The same conclusion might be drawn from data obtained with the muscle enzyme[4].

Zusammenfassung. Nachweis, dass bei der Hefe-GAPD-katalysierten PNPA-Hydrolyse das als Zwischenprodukt gebildete S-Acetyl-Enzym durch eine intramolekulare Wanderung zu einem N-Acetyl-Derivat führen kann. Im Gegensatz zu dem aus Muskel isolierten Enzym findet im Hefe-Enzym eine Acetylwanderung bzw. eine Acetylierung des gegebenen Lysin statt, ohne wesentliche Beeinflussung durch das Coenzym (NAD).

L. Polgár

Institute of Biochemistry, Hungarian Academy of Sciences, Budapest (Hungary), September 13, 1965.

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Effect of Ethionine Ingestion on Biliary Secretion and Bile Tree Capacity in Rats

The addition of small quantities of ethionine to the diet of experimental animals is found to alter the architecture of the liver. The main histological change described, and one of the first to appear, is proliferation of the ductular system which joins the bile ducts to the canaliculi[1]. Changes in function are also found: the concentration of bile salts being diminished and the flow rate increased[2]. This communication reports the measurement of biliary capacity, distended biliary capacity, flow rate, maximum biliary pressure during obstruction, and dye-concentrating ability of the liver in a group of albino rats given 50 mg ethionine per day for a period of 40 days.

The biliary capacities were measured by a method described previously[3], which consists essentially of an intravenous injection of suitable dye and the measurement of the volume of clear bile pushed out of the tree ahead of the dye-stained bile. The dyes used were bromsulphthalein sodium (BSP) and disodium O-sulphonyl phenyl-di(*p*-sulphonyl benzyl ethylamino phenyl)methanol anhydride (Blue EG), both of which are very rapidly excreted into the bile. Flow rate was measured using a standard drop counter, bile pressure with a Statham transducer, and dye concentrations with an Eel colorimeter.

Both the mean capacity and the mean maximum capacity following obstruction of the bile duct were found to be increased in the ethionine treated animals (Table). In both, the increase measured with BSP was slightly larger than when Blue EG was used, and the increase found following distension was greater than with the undistended tree. The mean biliary flow rate with the ethionine treated animals was 4.5 (SD ± 1.9) ml/h/kg body weight, and with the controls 3.4 (SD ± 0.43) ml/h/kg body weight: an increase of 38%. The mean maximum intrabiliary pressure recorded following obstruction of the bile duct was 12.6 (SD ± 1.8) cm water with ethionine treated rats and 16.5 (SD ± 1.8) cm water with controls: a decrease of 24%. The mean maximum dye concentrations in the ethionine treated rats were 23.2 (SD ± 8.1) mg/100 ml with BSP and 25.2 (SD ± 10.1) mg/100 ml with Blue EG, compared with control values of 39.2 (SD ± 8.7) mg/100 ml and 42 (SD ± 9.8) mg/100 ml respectively, doses of 0.1 mg dye being used in each experiment. The observed increase in bile flow rate is insufficient to account entirely for this fall in concentration.

The residual volume of the original contents remaining in the maximally distended bile tree at different time intervals following the injection of dye was measured in 3 animals. The dead-space volume was substracted from the readings and the results plotted on a log scale (Figure). From this it appears that the removal of bile from the distended tree during obstruction in ethionine treated rats is, as with normal rats[4], exponential with time.

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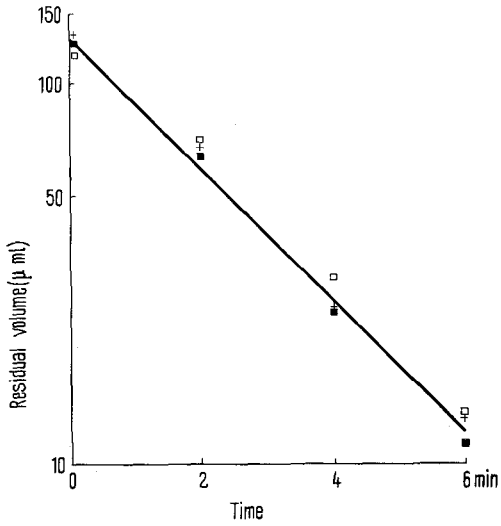
Increase in biliary capacity in rats fed 50 mg ethionine per day for 40 days

	No. of rats	Mean liver weight (g ± SD)	Mean capacity (µml/g liver ± SD) Undistended		Distended	
			Blue EG	BSP	Blue EG	BSP
Experiment	14	7.3 ± 0.7	4.80 ± 1.2	6.90 ± 0.7	13.20 ± 1.6	15.35 ± 1.4
Control	20	8.4 ± 1.2	3.65 ± 0.5	5.05 ± 0.7	9.85 ± 1.4	10.95 ± 1.0
Increase over control			34%	37%	40%	44%

Histological examination of slides prepared from livers of ethionine treated rats and stained by Feulgens nucleal method showed proliferation of bile ductules. The zones of proliferation were limited to areas surrounding the smaller veins of the portal tracts.

The increases found in the capacity of the biliary tree were in qualitative agreement with the observed histological picture. Furthermore, the measured increase in capacity indicates that secretion of the marker dyes occurs upstream from the zone of proliferation. As proliferation mainly concerns the ductules, which are at the junction of the canalicular and the duct systems, this would seem to indicate that dye secretion is effected only by the hepatic cells, a fact which, while generally accepted, has been questioned on deductive grounds[5]. The increase found in the capacity of the obstructed biliary tree suggests that the newly formed ductules are at least as distensible in response to pressure as the rest of the tree. The difference observed in the capacities measured with the different dyes are probably insignificant, but may be due to the fact that Blue EG is excreted more rapidly than BSP, and that this difference would be expected to be greater at a faster bile flow rate. The increased rate of bile secretion, coupled with the reduced ability of the liver to concentrate the dyes, supports the hypothesis of a dual origin of bile in which water and electrolyte solution produced by the ductular epithelium is added to a primary secretion from the hepatic cells. The exponential removal of bile from the tree during obstruction of the common duct and the reduced maximum pressures observed indicate that the newly formed ductules behave similarly to the rest of the bile tree with regard to regurgitation occurring during obstruction of the common bile duct.



Residual volume of original contents remaining in the distended biliary tree at different time intervals after injecting the marker dye. The values are corrected for total dead-space volume and the volume is plotted on a log scale. Ethionine fed rates (3 animals).

Résumé. La capacité, l'écoulement, la pression et la concentration de la bile ont été mesurés chez des rats dont le régime contenait de l'éthionine. Les résultats obtenus montrent que: (1) La BSP et l'E.G. bleu sont produits seulement par les cellules hépatiques; (2) la bile provient de deux ou de plusieurs sécrétions; (3) les ductules qui apparaissent dans le foie après administration d'éthionine fonctionnent normalement.

G. BARBER-RILEY

Department of Physiology, University of Malaya, Kuala Lumpur (Malaysia), September 23, 1965.

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Gefässkonstriktion durch synthetisches Bradykinin und ihre pharmakologische Beeinflussbarkeit

Bradykinin ist einer der stärksten Vasodilatatoren. In den letzten Jahren wurde jedoch durch mehrere Autoren über vasokonstriktorische Eigenschaften von Bradykinin in vivo[1–6] und in vitro[5,7–11] berichtet. GREEFF und MOOG[8,9] sowie KONZETT et al.[5,6] konnten die gefässkonstriktorische Wirkung in der Lunge durch Phenylbutazon und andere Antiphlogistika aufheben.

Quantitative Verhältnisse der Vasokonstriktion durch Bradykinin an der isolierten Hinterpfote der Katze haben wir[12] kürzlich mitgeteilt. Die Vasokonstriktion ist nach intraarterieller Gabe regelmässig auszulösen und erscheint bereits bei Dosen von 250 ng/kg Bradykinin.

Über die Ergebnisse der pharmakologischen Beeinflussung dieser Bradykininwirkung soll kurz berichtet werden, zumal bekannt ist, dass Bradykinin Katecholamine freisetzen kann[13,14].

Für die Versuche benutzten wir synthetisches Bradykinin in Substanz[15]. Das isolierte Gefässgebiet wurde mit

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