Hepatic Blood Flow In The Dogfish, Squalus acanthias.

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Pursuant to a general hemodynamic study by us on the dogfish, *Squalus acanthias*, an effort was made to evaluate the hepatic blood flow using the technique and theoretical framework developed by S. E. B. Radioactive Rose Bengal was used as a test substance, which dialysis tests showed completely bound to dogfish plasma proteins. The study expanded into problems of hepatic and renal function, and a critical analysis of the hematocrit. Under the experimental conditions employed, the dogfish hematocrit varies in different blood vessels.

Chemical Colorimetry of Squalus acanthias Bile.

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The chemical colormetry of bile is impeded by the color of bile. The following empirical methods were developed to effect a complete separation of dogfish bile pigment and bromsulfalein or phenol red. The method for phenol red resulted from a suggestion by E. K. Marshall, Jr.

I Bromsulfalein: dilute bile, 1 ml in 10 in a graduate centrifuge tube; add 5 ml butanol and 1 ml HCl (1 ml conc. in 100 ml water); shake and centrifuge. The green pigment will go into the butanol, and all the BSP will be left in the aqueous phase. Alkalize as desired for colorimetry. A graduated tube is necessary to keep tract of volume changes of the aqueous phase.

II Phenol Red: dilute bile 1 in 10; add 0.5 saturated Zinc sulphate solution and 0.5 ml 1 N, NaOH; centrifuge. Use graduated centrifuge tube. The bile pigment alone will combine with the gel.

Studies of Trimethylamine Oxide Excretion In The Dogfish. III. Tentative Identification Of The Volatile Amine In The Urine Of The Dogfish (Squalus acanthias)

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The occurrence of a volatile amine in dogfish urine which is not ammonia has been reported by us in an earlier abstract (M. D. I. B. L..

Bull., 1956). This free amine is present in dogfish plasma in trace amounts and in some cases is not detectable in plasma by the method of analysis.

We attempted to identify this volatile amine in the urine by the paper chromatographic method of Bremner and Kenton (1951). The volatile primary and secondary amines may be identified positively by this method; the volatile tertiary amines cannot be identified.

The volatile amine in dogfish urine was chromatographed and compared with standard solutions of various amines run simultaneously.

No primary or secondary amine in dogfish urine could be identified in spite of the presence of a volatile amine found in the urine by microdiffusion analysis. Thus by exclusion, the voltile amine has been assumed to be trimethylamine. Definitive chemical identification of this amine is planned.

This study was carried out in a laboratory maintained by the New York University College of Medicine.

Studies of Trimethylamine Oxide Excretion In The Dogfish I. The Renal Excretion Of Trimethylamine Oxide (TMAO) By The Dogfish, Squalus acanthias.

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The study of the renal excretion of TMAO by the dogfish was confined to: 1) A study of the extent to which the plasma TMAO is filterable at the glomerulus and the completeness of reabsorption of this TMAO by the elasmobranch renal tubule; 2) A study of the effect of some substances which are known either to affect tubular reabsorption generally or else may be related specifically to TMAO synthesis or degradation.

The protein binding of TMAO was determined at 12° C. by the dialysis technique using a Visking membrane. Binding of endogenous TMAO to the endogenous protein only was studied. Under these circumstances all the plasma TMAO was found to be freely filterable, with the concentrations of TMAO on both sides of the membrane being essentially equal (Mean Pf/P - 1.01 in 6 freshly drawn plasmas).

In a series of 21 dogfish studied under control conditions, the reabsorption of TMAO was almost complete, varying between 95 - 100% of the amount filtered.

In a group of pilot experiments performed to either change general tubular reabsorptive mechanisms or to affect the metabolism of TMAO, the following substances were given: 1) Phlorizin, 10 mgm./Kgm., I. M.