examined.

Wistar & SD strain rats (male, 300 g) were used. After 18–20 hrs fasting, pentobarbital was given i.p. (4.5 mg/100 g) Radioisotope labeled microspheres (^{51}Cr, ^{141}Ce, ^{85}Sr, 3M) were introduced into the left ventricle as previously described (Suzuki & Kitani, Jap. J. Nucl. Med. 13: 175, 1976). (15 μ & 50 μ spheres in the first injection). Thereafter bucolome solution in saline, (20 mg/100 g) was injected i.p. (in control rats only saiine was given). Forty min. later, 50 μ microsphere with another label was introduced.

The fractional distribution of cardiac ouput in sphanchnic organs, kidneys and lungs were calculated from the radioactivity distributed in each organ divided by the total activity of the dose administered.

1. The effect of pentobarbital: The fractional distribution of 15 μ as well as 50 μ microspheres in anesthetized rats was significantly higher in kidneys, and in most of the splanchnic organs, particularly in the small intestine compared with the values previously reported in unanesthetized rats. The most marked difference was noted in the hepatic fraction (hepatic artery) in which 4–5 times higher value was found in anesthetized rats than the unanesthetized rats value.

2. The fractional distributions measured by 15 μ and 50 μ microspheres were very similar except in lungs and liver, which were considered to be due to A-V and A-P shunts. However the differences between the values obtained by two different sized particles were less than 1% of cardiac output in these organs.

3. Bucolome was effective in increasing the small intentinal and decreasing pancreatic fraction as was reported in unanethsthetized rats. The increase in splenic fraction was not significant.

On Mucociliary Clearance Mechanism; Normal Ciliary Transport in the Dog

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The purpose of the present study is to assess mucociliary clearance action by measuring migration of test agents placed on the mucosal surface of the airway fo the dog.

The normal and right lung-reimplanted dogs were studied under anesthesia with Ketalar and Nembutal. A radioactive test agent was placed on the predetermined site of the mucosal surface through a catheter under fiberoptic bronchoscopic guidance. The dog inhaled aerosolized mist spontaneously to maintain ample humidity inside the airways during the study. Migration of radioactivity was sequentially imaged with a scintillation camera and migrating distance with time was directly measured from the images. Mean migrating velocity was estimated by a linear regression.

A centrifuged ^{99m}Tc-MAA solution was the test agent of choice for this study among various agents such as albumin microsphere of 2 u and 30 u in size, respectively and resin particles of 200–400 mesh. In the normal dog, when the agent was placed at the orifice of the posterior basal segment bronchus, the mean migrating velocity was 12.2 ± 1.6 (mean$\pm$1 S.E.) mm/min. (n=5) over the right bronchus, and it was 7.9 ± 2.1 (n=6) over the left. It was 11.7 ± 1.0 over the trachea (n=21). In the right lungreimplanted dog tested 3 weeks after surgery, it was 10.4 ± 2.7 (n=4) and 8.4 ± 1.6 (n=6) over the right and left bronchi, respectively. There was no slowing of migration over the site of anastomosis. There was no statistical difference between the normal and reimplanted right bronchi in the speed of ciliary transport or migration. In a dog whose tracheal mucosa was cauterized by silver nitrate at 5 cm proximal to the carina, either migration arrest or extreme slowing was observed at the cauterized site on the 5th and 8th days and migrating velocity was slightly slower than normal on the 10th day. It returned to normal 2 weeks after cauterization.