centration of 0.1 mg% without a complete loss of inhibitory effect.

Of a series of anions tested for antibacterial activity in the presence of dialyzed saliva, only iodide was effective in addition to thiocyanate(6,7). Fig. 2 confirms the antibacterial effect of iodide in the presence of dialyzed saliva and also demonstrates the antibacterial effect of iodide in the presence of an amount of lactoperoxidase equivalent to the amount present in 0.5 ml of saliva. The amount of iodide employed (250 μg per tube) was considerably in excess of the amount present in 0.5 ml of saliva (0.02-0.12 μg taking a range in saliva of 0.0035-0.024 mg/100 ml(7)). No effect of iodide was observed at a concentration equivalent to that of saliva.

The mechanism of the inhibition of lactobacillus growth by saliva is unknown. Thiocyanate is oxidized by peroxidase and H_2O_2 and the relationship of thiocyanate oxidation to microbial growth inhibition is under investigation. The demonstration that myeloperoxidase can substitute for lactoperoxidase in the antilactobacillus system suggests the possibility that myeloperoxidase present in leucocytes might exert an antibacterial effect by a mechanism similar to that reported here.

Summary. It has been previously reported by others that the growth of lactobacillus in complete growth medium is inhibited by saliva and that a component of the antilactobacillus system of saliva is thiocyanate ion. The inhibition of growth of lactobacillus by saliva is decreased by catalase. The heat labile non-dialyzable component of the antilactobacillus system of saliva can be replaced by an amount of lactoperoxidase equivalent to the amount present in saliva. This suggests that the antilactobacillus system of saliva contains at least two components, peroxidase and thiocyanate ions. Iodide at a concentration in excess of that present in saliva can replace thiocyanate in this system.

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Effect of Ethionine on Total Blood Ammonia in Rats.* (29883)

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Amino nitrogen is normally disposed of in the liver by way of glutamic acid and the production of urea. If the deamination system of the liver is damaged, some of the amino nitrogen appears in the blood as ammonium ion(1). Endogenous ammonia intoxication(2) is due to the inability of the liver to detoxify endogenous ammonia, and exogenous ammonia intoxication is a result of the failure of metabolizing extrahepatic ammonia, produced by gastro-intestinal bacterial activity(3). In both cases there is too much ammonia in the peripheric circulation.

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A well known clinical syndrome observed in some liver diseases, and in the conditions of portacaval shunt, is considered due to ammonia intoxication(4).

The purpose of the present study was to produce experimentally liver damage in rats to determine its affect on ammonia metabolism. Ethionine, a metabolic antagonist of methionine induces in experimental animals a periportal fatty liver, and inhibits some of the known biochemical reactions of methionine in the liver(5). Ethionine also interferes with protein, carbohydrate and lipid metabolism in the liver(6,7,8,9). Since methionine administration prevents most of the known effects of ethionine(10), it appears interesting to know whether methionine would also protect rats against the effects, if any, of ethionine on ammonia metabolism.

Rats were treated with ethionine alone or with both ethionine and methionine. Postprandial determination of blood ammonia was then performed and the results compared with the values of blood ammonia found in normal fasting or fed control animals.

Methods. Female Sprague-Dawley rats, with body weights ranging from 210-230 g were kept in individual cages throughout the experiment. We found that our standard Purina Lab. diet contained 21.5 g of protein and 3.4 g of total nitrogen in 100 g of dry weight. This diet was used as the basal diet. 0.5% of DL-ethionine alone or 0.5% of DL-methionine plus 0.5% DL-ethionine were added to make special diets used in this experiment.

The following 4 groups of rats were used: 1) Fed basal diet and killed after 24-hour fasting period; 2) Fed basal diet and killed 4 hours after feeding meat; 3) Fed for 6 weeks with ethionine diet; 4) Fed for 6 weeks with ethionine diet and then for 4 weeks with ethionine and methionine diet. Animals of Groups 3 and 4 were killed 4 hours after feeding meat. We observed previously that after 24 hours of fasting a rat can consume, in less than 30 minutes, about 6 g of meat (commercial corned beef), for 100 g of body weight. This amount was therefore used in this experiment. We found that the corned beef in this study contained 27.1 g of protein and 4.3 g of total nitrogen in 100 g of wet weight.

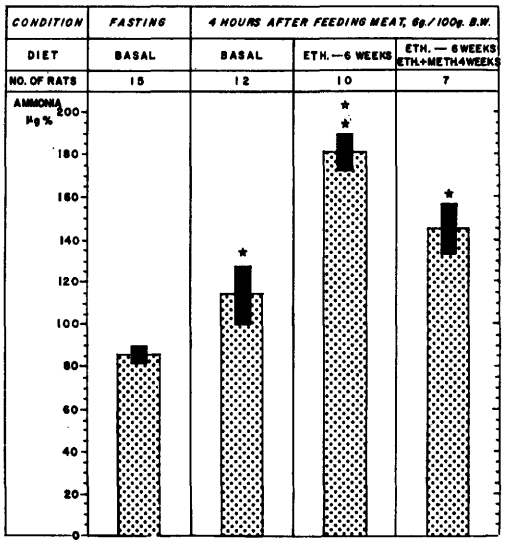

FIG. 1. Total blood ammonia (μg %) in rats. Basal control diet or diet containing DL-ethionine (ETH) and DL-ethionine plus DL-methionine (METH) were fed. Sampling was done 24 hr after fasting or 4 hr after feeding meat. Standard deviation of the mean is indicated at top of each bar (dotted) as a narrow dark bar. Significant difference (P less than 1%) between meat fed and treated rats, and controls is indicated by a black star above the bars. Empty star indicates that ETH-treated group was significantly different (P less than 1%) from the other 3 groups.

In all groups samples of blood were taken from the vena cava under light ether anesthesia and the rats were then killed. Total blood ammonia was studied by microdiffusion technique(11). Recently, Tobe demonstrated that the method is specific for ammonia(12).

Results. Fig. 1 summarizes the experimental results. It is apparent that feeding meat resulted in a significant increase of blood ammonia in normal rats. After a 24-hour fasting period, blood ammonia was 86.2 $\pm$ 4.0 μg%, but 4 hours after feeding meat it was found to be 114.5 $\pm$ 14.9 μg%. Ethionine treated rats had significantly elevated blood ammonia, 181.1 $\pm$ 9.1 μg%, as compared with other groups. Addition of methionine to the ethionine diet produced a decrease of postprandial blood ammonia concentration, which averaged 145.0 $\pm$ 12.6 μg% and was significantly lower than the values found in the group fed the ethionine diet alone.

Discussion. Ethionine used under the conditions of the present experiment is a hepatotoxic agent known to produce several metabolic alterations of liver function. It is apparent that it also interferes with ammonia metabolism.

Meat was used in this study as a test of the ability of the liver to handle this nitrogen rich meal. Rats pretreated for 6 weeks with a diet containing ethionine reacted to the test meal by an abnormal increase of blood ammonia. Addition of methionine to the ethionine diet produced a marked improvement in the reaction of rats to the test meal.

It is concluded that a diet containing ethionine may result in abnormal ammonia metabolism in rats. Methionine, which is known to prevent most of the effects of ethionine, probably has a protective action against the effect of ethionine on ammonia metabolism, under the experimental conditions described here.

Summary. Postprandial blood ammonia was significantly higher in rats fed the diet containing ethionine than in the animals given the normal basal diet. Addition of methionine to the ethionine diet had a protective action against the effect of ethionine on ammonia metabolism. Experimental liver damage by ethionine is considered a cause of abnormal ammonia metabolism.

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Site of Origin of Increased Fibrinolytic Activity During Venous Occlusion.* (29884)

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Fibrinolytic activity of the blood is increased in conditions such as strong physical or emotional stress(1) and by venous occlusion(2). The site of origin of increased fibrinolytic activity of the blood is not known. Mole demonstrated that, after sudden death, blood in limb veins exhibited greater fibrinolytic activity than blood collected from the heart. He postulated that vascular endothelium was the source of increased fibrinolytic activity after sudden death(3). Fearnley reported that the fibrinolytic activity of citrated plasma was increased by placing it for 2 minutes in an isolated segment of an exposed vein. This author concluded that the wall of large veins adds fibrinolytic activity to the blood(4).

In the present investigation venous occlusion was used as a method to gain additional information on the site of origin of increased fibrinolytic activity.

Materials and methods. The subjects used in these experiments were healthy male medical students and staff members, ages 18 to 42. In each experiment a control blood sample was collected from an antecubital vein

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