benzoate and sodium salicylate increased the metabolism of normal mice. 3,5-Diiodo-2-hydroxybenzoate, 5-iodo-3-hydroxybenzoate and 3-hydroxybenzoate did not increase the metabolism of rats.

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Fecal Enzymes of Dogs with Pancreatic Exclusion.* (27415)

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It has recently been shown that the feces of rats contain enzymes that act on substrates digested by pancreatic enzymes(1). The present study was made to determine what portions of fecal enzymatic activity are of pancreatic origin by measuring the enzymatic activity in feces of normal dogs and of dogs in which pancreatic juice no longer entered the intestine.

Methods. Dogs. The studies were made on normal dogs and dogs in which a total separation of the pancreas from the duodenum, with interposition of omentum between the 2 organs, had been performed 6 to 8 weeks earlier. Both groups of animals were fed a commercial canned dog food *ad libitum*.

Feces. Feces were collected within 1 hour after passage. A portion of the sample was weighed, 0.9% sodium chloride solution was added to give a concentration of 0.1 g wet weight of feces per ml of final mixture, and homogenization was performed for 1 minute in a high speed blade-type homogenizer (Servall Omnimixer). The homogenate was stored in an ice bath until enzyme determinations were performed (within 3 hours of time of collection of the feces).

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Enzyme determinations. Enzyme determinations were made titrimetrically using a recording pH-stat (Radiometer). p-Toluene sulfonyl-L-arginine methyl ester was the substrate for trypsin, acetyl L-tyrosine ethyl ester for chymotrypsin, and vegetable oil emulsion for lipase. A complete description of the methods has been published(1). Enzymatic activity was expressed as micromoles of substrate split per minute per gram wet weight of feces. When required to bring the activity within the range of the methods fecal homogenates were diluted with 0.9% sodium chloride solution.

Results. Single samples of feces from 22 normal dogs were tested. All samples had readily measurable activity on all 3 substrates, but there was a wide range (Table I). Three dogs with pancreatic separation were studied and 10 samples of feces from each of these dogs were analyzed. Compared with the feces from normal dogs, the feces of the dogs with pancreatic separation had much lower enzymatic activities (Table I). Expressed as % of mean values for normal dogs the mean values for dogs with pancreatic separation were: lipase 17%, chymotrypsin 2%, and trypsin 4%. For lipase there was a slight overlap between the range of values for nor-

TABLE I. Fecal Enzymes of Normal Dogs and of Dogs with Pancreatic Separation.

	No. of samples	Lipase			Chymotrypsin			Trypsin		
		Mean	Range	S.D.	Mean	Range	S.D.	Mean	Range	S.D.
Normal	22	51	13–212	57	306	50–703	260	171	41–625	185
Pancreatic separation										
Dog A	10	10	5– 20	5	6	4– 11	2	6	3– 14	4
Dog B	10	11	3– 18	5	12	4– 23	6	9	8– 14	3
Dog C	10	5	2– 7	2	3	1– 5	1	3	1– 4	1

All values expressed as micromoles substrate split per minute per gram feces.
S.D., standard deviation.
Difference between means of samples from normal dogs and of samples from each dog with pancreatic separation statistically significant for each enzyme ($P < 0.05$).

mal dogs and dogs with pancreatic separation; for chymotrypsin and trypsin there was no overlap.

Discussion. These studies show that a major portion of the enzymatic activity of the feces for the substrates studied is of pancreatic origin. While it is undoubtedly true that most of the pancreatic enzymes are autodigested and reabsorbed, behaving in this respect like ordinary food protein(2), apparently enough of the enzymes escape destruction to be readily detected in the feces. The source of the enzymatic activity that remains after pancreatic exclusion is uncertain; none of the substrates used is completely specific for pancreatic enzymes.

The results suggest that study of fecal enzymes might be helpful in detecting pancreatic insufficiency in patients.

Summary. The feces of 3 dogs in which entry of pancreatic juice into the intestine had been excluded by separation of the pancreas from the duodenum had much lower lipase, chymotrypsin, and trypsin activity than did the feces of normal dogs.

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Effect of Oxytocin on Plasma Free Fatty Acids of Non-Diabetic and Diabetic Dogs.* (27416)

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Synthetic oxytocin and related disulfide peptides with oxytocic activity exert an insulin-like action *in vitro* on rate of glucose utilization and rate of lipogenesis from glucose by rat epididymal adipose tissue(1,2,3). Since the *in vitro* action of insulin on adipose tissue(4,5,6,7) is reflected *in vivo* by a reduction in concentration of free fatty acids (FFA) of the plasma(8,9,10,11), it became pertinent to determine whether oxytocin exerts a similar effect *in vivo*.

Methods. Seven mongrel male healthy dogs and 7 alloxan-diabetic dogs were trained to be in a hammock while samples of venous blood were drawn from an indwelling needle at intervals before and after injection of synthetic oxytocin.† The dogs were fasted overnight; the alloxan-diabetic dogs were deprived of exogenous insulin for 24 hours. The

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