pregnancy. By estimation of DNA, a study of rat mammary gland growth was conducted through pregnancy and early lactation. Present data show 20.9% of total growth occurs during the first 10 days of pregnancy, 59.3% by the 20th day of pregnancy, and development is 98.3% complete by the 3rd day of lactation.

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Absorption of Potassium Iodide from Gastro-Intestinal Tract.* (26366)

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Prompt excretion of orally administered iodide by the salivary gland provides a simple measure of the rapidity of its absorption from the gastro-intestinal tract. Salivary iodide excretion is clearly altered in a variety of clinical states in man(1), but the site of its absorption is controversial(1,2,3,4,5,6). In view of its possible utility as a measure of gastrointestinal absorption, it seemed desirable to determine what organ or organ system is involved in its absorption.

Methods. 1. *Human*: The potassium iodide absorption test(1) was conducted as follows: Subjects were given a solution of 0.25 g of potassium iodide in water, *per os*, following a 14- to 16-hour fast. Their mouths were then rinsed. Saliva was collected every 2 minutes and tested for presence of iodine (1 ml of saliva added to 1 ml of a 1% starch solution containing 4 drops of a 10% $FeCl_3$ solution; this test is positive for as little as .0027 mg of iodine). Ten normal subjects were found to have iodine present in their saliva in from 6 to 14 minutes, well within the normal limits determined by Heath(1). Seven of these subjects were retested similarly, except that $BaSO_4$ was added to the potassium iodide solution in sufficient quantity to produce a moderately thick suspension, and the studies were done under fluoroscopic control. The subjects were placed on a fluoroscopy table and were rotated so that all portions of the stomach were exposed to the iodide-containing radio-opaque medium. They then were placed in a supine position, rotated slightly to the left. Saliva was collected and tested for iodine every 2 minutes, and fluoroscopic observations were made at these same intervals. One of the subjects in this group was restudied (after an interval of 3 days) with Urokon® (50%) as the opaque substance to obviate the possibility of physical interference with absorption by $BaSO_4$. The saliva of all of the above subjects contained no iodide until some of the radio-opaque medium had been seen to pass into the duodenum (Table I).

A solution of potassium iodide was instilled, *via* a tube, directly into the duodenum of 2 of the previously tested subjects. Iodide was detected in their saliva in 2 to 4 min-

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TABLE I. Potassium Iodide Absorption in Humans.

Potassium iodide	Min. between intake of KI solution (including contrast media) and (a) Duodenal appearance of barium	(b) Salivary appearance of iodine	Time from duodenal to salivary appearance
	Min.		
In barium sulfate	22	24	2
	12	15	3
	22†	25	3
	*	—	—
	*	—	—
	37†	40	3
	35†	39	4
In diodrast†	*	—	—
In barium sulfate instilled directly into duodenum	Direct instillation	3	3
	,,	4	4
In barium sulfate given after 7.5 mg I.V. probanthine	110	114	4
	120	123	3
	130	133	3

* Test discontinued after 20 min.
† Patients studied twice.

utes. This corresponds to the results obtained when potassium iodide (.25 g in 20 ml sterile distilled H_2O) was given intravenously to 4 alcoholic patients(7). Three subjects were given .25 g of potassium iodide in a $BaSO_4$ mixture, *per os,* after they received intravenous probanthine which was given to delay gastric evacuation. Saliva of these subjects was negative until there was fluoroscopic evidence of $BaSO_4$ in the duodenum.

2. *Wistar strain male rats* weighing between 147 to 181 g were used. Animals were secured to a board; their abdomens were shaved and infiltrated with 1% xylocaine hydrochloride. Group I (11 rats): A midline incision was made and a polyvinyl tube was passed perorally into the stomach. A loose ligature was placed at the cardia, to be tied at termination of experiment, and an occluding ligature was placed at the pylorus. (All major vessels were avoided.) The stomach then was evacuated *via* the tube and washed with 5 ml of distilled water. Two ml of a 25% solution of potassium iodide (in .01N HCl) was injected into the stomach. The tube then was removed and abdominal incision closed. The animals were sacrificed after a 1-hour absorption period. The stomachs were removed and the contents quantitatively extracted with demineralized water.

Group II (12 rats): A midline incision was made and a polyvinyl tube was passed perorally and manipulated into the duodenum. A loose ligature was placed at the pylorus (excluding all major vessels) and 2 ml of a 25% solution of potassium iodide (in .01N HCl) was slowly (1-1½ min) injected into the intestine. The tube then was removed, the pyloric ligature tied to prevent flow from the stomach, and the abdominal incision was closed. Animals were sacrificed following one hour of absorption. The entire intestinal tract, excluding the stomach, was removed and the contents quantitatively extracted and analyzed for retained iodine by protein bound iodine methods(8). An average of 55 mg potassium iodide/100 g rat/hr was absorbed from the intestine (Table II). The difference is highly significant ($P>.01$).

Discussion. The present studies support the contention of several authors that the principal site of absorption of iodide is the small intestine. Heath and Fullerton(1) studied absorption of iodide in human subjects, using the method employed in this present study, and found that iodine could be detected in saliva of normal subjects in 6 to 15 minutes after oral ingestion, while its appearance was markedly delayed in patients with scurvy, myxedema, pernicious anemia and alcoholic cirrhosis. They felt that this delay reflected *intestinal* malabsorption on the basis of the work of Cohn(2), Eisenmann (3) and others. Cohn(2) assessed absorption of iodine in isolated segments of the intestine of anesthetized dogs. He found that 63% of potassium iodide placed in the colon

TABLE II. Potassium Iodide Absorption in Rats.

No. rats	Avg wt, g	Potassium iodide inj., mg	Potassium iodide absorbed mg	%	mg/100 g /rat/hr
11	164	570	85	14.9	55 ± 21
12	163	650	320	48.9	197 ± 36

and from 74 to 80% of the potassium iodide placed in the jejunum was absorbed, while no more than 31% of the iodide placed in the stomach was absorbed. The difficulty in recovering the contents of the stomach, this author suggested, might have caused a loss which would place the percent absorbed higher than the actual amount absorbed. In support of the absorptive role of the stomach are the findings of Rankin(4), Henning(5) and Bertrand(6). Rankin(4) instilled potassium iodide into the rumen of sheep and detected iodine in the saliva in 4 minutes, concluding that the stomach was a principal site of iodine absorption. Henning(5) and Bertrand(6) found that patients with chronic gastritis and gastric ulcer excreted salivary iodine more rapidly than normal subjects, assuming that potassium iodide was absorbed in the stomach.

The difficulty in determining the exact time of pyloric passage may account for the discrepancy between our results and those of Henning(5) and Bertrand(6). Henning assumed that by placing the subject in the left lateral decubitus position, negligible amounts of gastric contents would enter the duodenum, while Bertrand determined time of passage using an air-fluid contrast technic under fluoroscopic control. In the present study, the use of radio-opaque media permitted more accurate determination of the passage of small quantities of potassium iodide into the small intestine. Also, the time elapsed between passage into the duodenum and salivary appearance of iodide agreed closely with the time required for detection of salivary iodide when potassium iodide was instilled directly into the duodenum.

Summary. Potassium iodide mixed with radio-opaque media was administered orally to human subjects studied under fluoroscopic control. Iodide appeared in saliva of these subjects 2-4 minutes after mixture passed into the duodenum. Iodide instilled directly into the duodenum of 2 subjects was detected in their saliva 3-4 minutes later. 14.9% of the iodide placed in the stomach and 48.9% of the iodide placed in the duodenum of rats was absorbed within one hour. It appears that the small intestine is the principal site of absorption in humans and in rats.

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The Local Tissue Reaction in Rabbits to Gelfoam Implants Containing Desmosterol or Cholesterol.*† (26367)

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A recently developed compound, Triparanol (MER-29), has been shown to inhibit biosynthesis of cholesterol(1). It has been further demonstrated that the biosynthesis of cholesterol is probably inhibited at the step which requires reduction of the side chain double bond of 24 dihydrocholesterol, with a resultant increase in serum levels of desmosterol (precursor to cholesterol)(2). MER-29 is at present being studied in hu-

* The desmosterol used in this study was supplied by Wm. S. Merrell Co., Cincinnati, Ohio.

† MER-29 is trade name of compound produced by Wm. S. Merrell Co.