intestine, but may be formed during the course of the preparation from some more complex nucleotide. A third fraction corresponding to 12 to 16 mg P per 100 g intestine is not precipitated by uranium. The nature of the phosphate esters in this fraction has not been established.

Summary. A fractionation of the acid-soluble organic phosphoric esters of the small intestine as the uranium salts has been described. Aminoethyl phosphoric ester and adenylic acid have been isolated in crystalline form, each comprising about ¼ of the acid-soluble organic P of the rabbit small intestine. The occurrence of the former ester in pig intestine has also been demonstrated.

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Effects of Caffeine on Human Sugar-Tolerance Curves.*

MARTIN DEAKINS. (Introduced by H. C. Hodge.)

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There is considerable evidence that caffeine affects the blood sugar of animals. In dogs, a rise follows caffeine injection[1] amounting in some cases to 40-60% above normal[2] in both arterial and venous blood;[3] a double dose is necessary to produce hyperglycemia during avitaminosis.[4] During work,[5] the sugar tolerance curve rises more rapidly with caffeine than without and stays up longer.

However, caffeine produces no hyperglycemia in castrated female rabbits,[6] nor does it affect the glycogen contents of the heart or liver in rats and guinea pigs.[7]

No report could be found regarding the effect of caffeine on the blood sugar or sugar tolerance curve for man.

Eight sugar tolerance curves were determined on the same subject (M.D.) using the sugar method of Folin and Malmros.[8] The nutri-

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tional history was nearly the same in all cases. No food was taken after 5 p. m. the day before, the amount of sleep and activity was similar, and the determinations were made at the same time of day, 10 a. m.—1 p. m. Fingertip blood samples were taken every 10 minutes for the first 1½ hours after ingesting the dextrose. All sugar determinations were made in duplicate.

The data and results from 4 of the experiments are shown in Fig. 1.

These results indicate that large doses of caffeine depress the peak of the human sugar-tolerance curve and slightly delay the return to normal. Caffeine alone does not raise the blood sugar appreciably. The amounts commonly ingested in coffee and tea probably do not significantly affect either the human tolerance curve or the blood sugar levels.

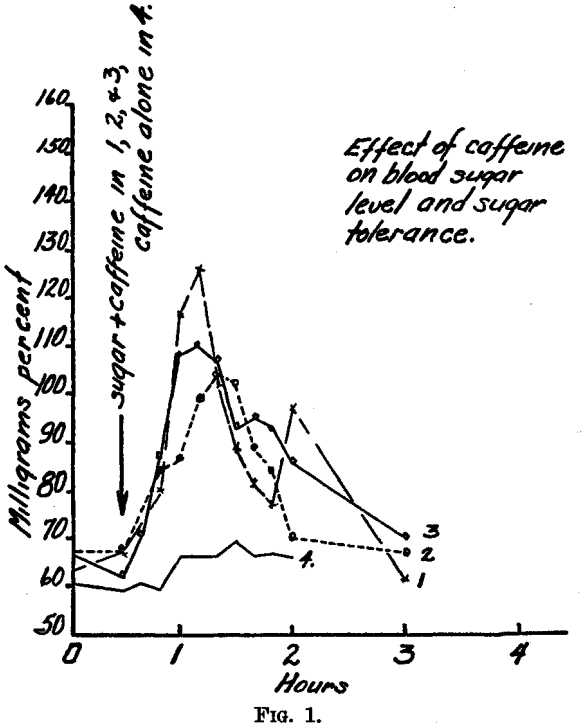

FIG. 1.

1. 50 g dextrose + 200 cc distilled water.
2. 50 g dextrose + 0.5 g caffeine + 200 cc distilled water.
3. 50 g dextrose + 200 cc coffee (9 g coffee/100 cc water).
4. 0.5 g caffeine + 200 cc distilled water.