TABLE I. Kidney Transamidinase Activity in Rats Fed 25% Soybean Meal Rations.

Days on ration	Hydroxyguanidine formed: Heated soybean ration	Raw soybean ration	%
	(μmoles/min/g wet kidney)		
1	.19	.17	89
2	.22	.20	91
3	.22	.16	73
4	.20	.13	65
6	.20	.14	70
12	.22	.15	68
18	.19	.13	68

Transamidinase activity represented by hydroxyguanidine formation from arginine and hydroxylamine according to Walker(1). Each value represents the average of 2 female and 2 male rats. Standard error of each group ranged from ± 0.01 to ± 0.03.

1 and 11 $\pm$ 2 g/4 days; and food consumption, 29 $\pm$ 1.4 and 24 $\pm$ 1.5 g/4 days.

Discussion. The lowered transamidinase activity does not represent a generalized decrease of tissue enzymes since previous studies of several enzyme activities have revealed no differences. Muscle creatine and urinary creatinine excretion have also been observed in our laboratory to be similar. Presently, no explanation for the lowered transamidinase activity after raw soybean feeding can be offered. The effect is being used as a "rapid" assay in fractionating raw soybeans for a "growth inhibitor." Those fractions which reduce the kidney transamidinase activity after feeding are further tested for effects on the growth rate of weanling rats.

Summary. The kidney transamidinase activity of weanling rats fed raw soybean meal rations was reduced to approximately 70% of control animals fed heated soybean meal rations. This reduced activity was attained in 4 days feeding and remained at this level for the remainder of the feeding test.

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A Coprophagy-Preventing Metabolism Cage for Mice or Hamsters. (29069)

H. H. DRAPER AND A. F. ROBBINS

Division of Animal Nutrition, Animal Sciences Laboratory, University of Illinois, Urbana

The demonstration that coprophagy is extensively practiced by the laboratory rat(1) indicates that the results of many studies of dietary requirements, intestinal absorption and pathways of excretion pertaining to rodents have been influenced by this factor. For example, it has been shown that the ability of the rat to thrive on a diet deficient in Vit. K depends upon its having access to those amounts of this nutrient which are synthesized by intestinal microorganisms and excreted in the feces(2). Several devices for preventing coprophagy by rats have been proposed, including the use of tail cups(1) and circular or tubular cages(3,4). The problem is more difficult to resolve in mice because of their smaller size; however, during a study of the intestinal absorption of calcium by this species, an inexpensive metabolism cage was devised which satisfactorily prevented coprophagy and afforded a quantitative separation of feces and urine. A description of this apparatus is given herewith.

Procedure. The components of the metabolism cage and their specifications are outlined in Fig. 1 and a photograph of the assembled unit is shown in Fig. 2. The cage consists essentially of 2 concentric pyrex rings, 110 mm and 50 mm in outside diameter, respectively, and 1.25 in wide, cut from standard tubing, which are held in position between 2 pieces of quarter-inch stainless steel wire mesh. The pieces of wire are 15 cm square

and are held together by 2 tension springs. This apparatus affords a circular tunnel which permits forward and backward movement of the experimental animal but which virtually prohibits turning around. The center ring is held in position by an outside collar constructed of wire mesh and soldered to the bottom of the cage. The cage can be adapted to young or adult animals by using pyrex rings of different dimensions; the specifications given in Fig. 1 are appropriate for mice weighing about 25 g. In a cage of these dimensions mature mice were observed to achieve an occasional reversal by ventral movement, but only with such difficulty as to preclude their practicing coprophagy. A signal advantage of this design is that the dimensions of the tunnel can be readily adapted to animals of different sizes by substituting pyrex rings of appropriate width and depth which are economically obtainable from standard stock tubing. If desired, turning about can be completely prevented by this means.

The diet is placed in a pyrex thimble constructed from standard 27 mm tubing (Fig. 1) which is suspended by means of a pressed ring from the wire mesh floor within the inner ring. Access to the diet is provided by a one-inch opening in the inside ring which is aligned with a similar opening in the neck of the feeder. Food spillage is prevented by making a loose slurry of the diet with water and by the 45° incline in the lower portion of the diet thimble. The shape of the feeder enables the animal to enter it to the extent of about two-thirds of its body length, the hind feet remaining on the wire floor of the

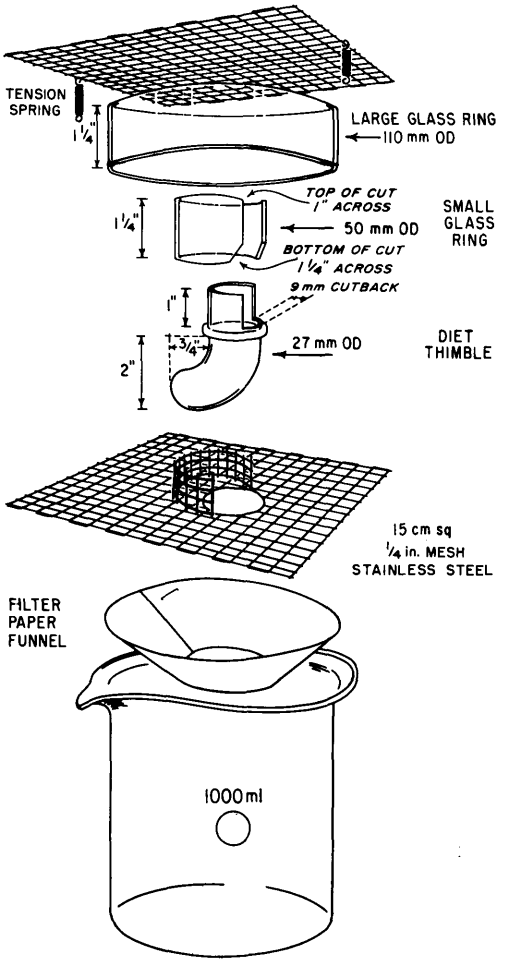

FIG. 1. Expanded drawing of coprophagy-preventing cage showing specifications of component parts.

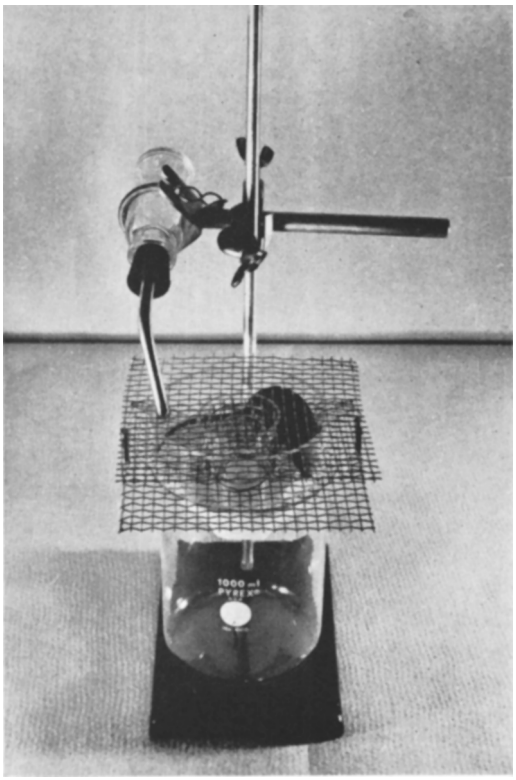

FIG. 2. Photograph of assembled metabolism unit.

circular tunnel, but prevents him from removing portions of the diet in his paws and thereby contaminating the urine and feces.

The cage, with the feeder in position, is placed atop a 1-liter pyrex beaker in which the fecal pellets are collected. The urine is absorbed on an 18.5 cm piece of No. 42 Whatman ashless filter paper which is folded into a funnel shape, secured by 2 wire staples, and supported by the rim of the beaker. A 3 cm opening is cut in the bottom of the paper funnel through which the fecal pellets fall into the beaker. As this opening is situated beneath the central portion of the cage which is inaccessible to the animal, no urine can fall directly through it. Water is provided by means of a bottle attached to a ring stand and fitted with a pyrex tube which protrudes slightly through the wire mesh at the upper edge of the cage. As evidence that mice adapt to the confinement imposed by this cage, 10 adult mice were maintained in these units for 10 days on a daily intake of 3 g of synthetic diet without exhibiting a significant change in body weight.

The fecal pellets are collected daily after transferring the cage and paper funnel to another beaker. To replenish the diet, the 2 tension springs and the upper piece of wire mesh are removed, and the food is inserted into the feeder through the opening in the neck. Urine analysis entails either prior elution from the filter paper or, as in the case of some inorganic elements, ashing the paper along with the urine sample. Analysis of the paper funnels for Ca and Mg yielded values of 3.6 and 6.6 μg, respectively, amounts which are generally negligible in relation to the urinary excretion of these elements. A single paper funnel was observed to be capable of absorbing the urine excreted by a mouse over a period of about 5 days; larger quantities of urine required more frequent collections or the use of 3 mm paper.

Summary. A metabolism cage for mice or hamsters is described which affords a separation of urine and feces, and which prevents coprophagy.

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Blood PTA (Factor XI) Levels Following Plasma Infusion.* (29070)

H. L. NOSSEL, J. NIEMETZ AND A. SAWITSKY (Introduced by L. R. Wasserman)
Departments of Hematology, Mount Sinai Hospital, New York City, and Long Island Jewish Hospital, New Hyde Park, L. I.

Although plasma infusion is used for hemostasis in the hereditary hemorrhagic disorder PTA (Factor XI) deficiency, actual data on the effect of transfusion on the level of PTA factor is very limited(1) and the value of transfusion is thus in doubt. With the recent introduction of improved methods of testing, blood PTA levels following plasma infusion have been measured and correlated with the hemostatic effect.

Methods. PTA factor activity was measured by two methods described by Nossel (2):

1. The ability was tested of test plasma to correct the celite† partial thromboplastin time of congenitally PTA deficient plasma.

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† Celite 512 obtained from the Johns-Manville Co. Ltd., London S. E. 11.