gestive of treatment effects but do not approach statistical significance.

Summary and conclusions. Effects of chlorpromazine and LSD-25 on sex behavior of 12 male albino rats were studied. Chlorpromazine at 2.5 mg/kg injected 30 minutes before trial and LSD at both 200 γ/kg and 130 γ/kg injected 5 minutes before trial, reduced the number of copulations preceding ejaculation. Reduction in number of copulations by LSD did not follow the pattern of tolerance described for impairment of rope-climbing by LSD. Rate of copulation on the first trial that chlorpromazine was given was significantly slowed.

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Water, Neutral Fat and Solids of Adipose Tissue.* (25533)

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It is variously stated that water accounts for from 5 to 30% of the weight of adipose tissue(1). The amount of water associated with fat is a variable which may influence values obtained for lean body mass and total body fat calculations when these parameters are estimated from densitometric or from total body water measurements(2). In this connection the question arises, does adipose tissue increase in size and weight as the result of addition of both water and neutral fat or are neutral fats incorporated into adipose tissue without inclusion of significant amounts of additional water? Since adipose tissue can make up from about 5 to 50% of an individual's total body weight, it is of interest to determine the factors which may influence the variability of adipose tissue composition. This report presents the results of an investigation in which relationships among neutral fat, solids and water in adipose tissue were studied.

Methods. Twenty-four adult male Sprague-Dawley rats were subjected to a cold environment (4-8°C) from 23 to 26 days; 12 control animals were maintained at room temperature (22-24°C). In both groups water and food (Purina Dog Chow) were given *ad lib.* Peri-renal adipose tissue was removed as completely as possible from etherized, exsanguinated, adult white male Sprague-Dawley rats. Water was estimated by weight difference after drying *in vacuo* (40-60 mm Hg sub-atmosphere pressure) at 38°C for 48 hours. Neutral fat was estimated after extraction with ethyl ether. The weight of the dry, defatted residue represents solids present in the adipose tissue.

Results. The weight of peri-renal adipose tissue in experimental and control animals fluctuates as a function of individual variation and/or as the result of exposure to low temperature for prolonged periods. As weight of the adipose tissue increases, the percent water decreases exponentially, whereas the percent neutral fat increases exponentially (Fig. 1). Large samples of adipose tissue contain about 5% water and 95% neutral fat whereas in smaller samples there may be 30-40% water, and only 50-60% neutral fat.

In an attempt to study these relationships further, data from both experimental and con-

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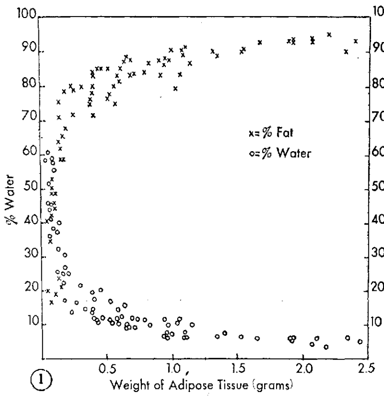

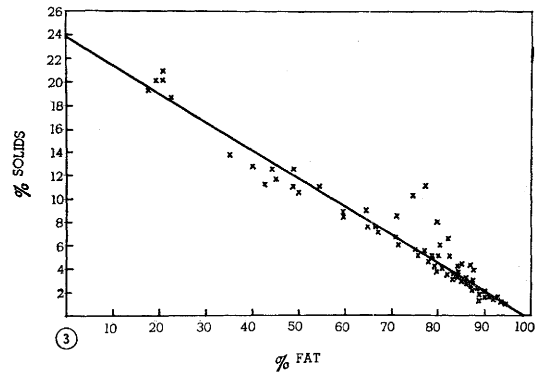

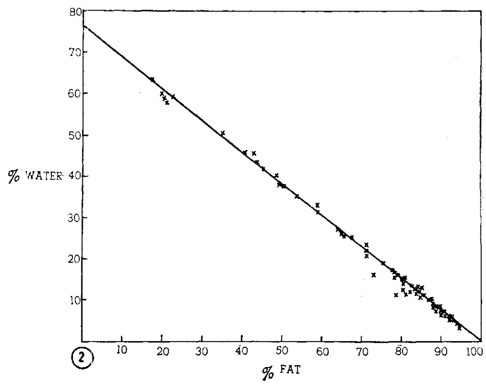

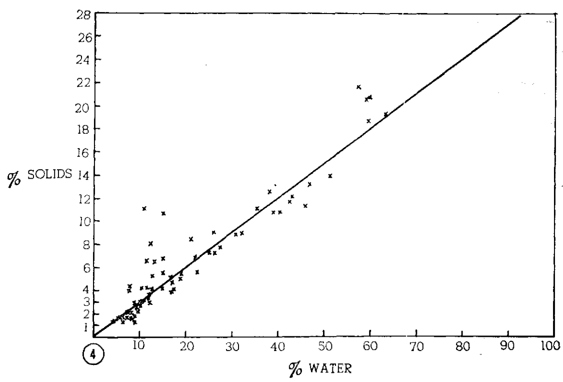

FIG. 1. % water and % fat in adipose tissue.

FIG. 2. Relationship between % fat and % water in adipose tissue. y = –.76, r = –.99.

FIG. 3. Relationship between % fat and % solids in adipose tissue. y = –.25 + 24, r = –.96.

FIG. 4. Relationship between % water and % solids in adipose tissue. y = .3 × + .17, r = .95.

trol animals are plotted together. In peri-renal adipose tissue an inverse relationship exists between the % water and % fat (Fig. 2). If one extends the best fit line to the X axis a hypothetical situation is created in which "adipose tissue" consists of 100% neutral fat. Conversely if the best fit line is extended to the Y axis this tissue contains no neutral fat and about 76% water. An inverse relationship also exists in this tissue between % fat and % dry solids (Fig. 3). A similar extension of the best fit line to its intercepts suggests that in "adipose tissue" free of solids, there is about 98% neutral fat, whereas, in "adipose tissue" free of neutral fat there is 24% dry solids. The percentages of water and dry solids in peri-renal adipose tissue are directly related (Fig. 4).

The % water in fat free peri-renal adipose tissue is significantly lowered in the cold treated animals—mean of 80.39 ± S.D. 1.7 in controls and 77.12 ± in cold exposed animals. The Student's T test indicates this difference is significant at the 1% level.

Discussion. It may be rewarding to examine some relationships between water, solids and neutral fat in peri-renal adipose tissue. It has been demonstrated that water and dry solids vary inversely with amount of neutral fat present in adipose tissue and directly with one another. "Adipose tissue" freed of neutral fat contains a constant amount of water and dry solids; as water and dry solids approach zero neutral fat approaches 100% of the composition of adipose tissue. These observations can be taken to support the hypothesis that neutral fat is added to a tissue matrix without addition of water. Water it seems exists in this tissue in association with non-fat solids, since addition of neutral fat acts to dilute these constituents. The above data lend further support to the hypothesis that the % water in the fat free solids of adipose tissue is constant.

The recent observation(3) that an increase in density of adipose tissue occurs as the result of loss of fat during caloric restriction in humans could be interpreted by the above data.

The decrease in % water in fat free solids of cold treated animals reflects the contraction of extracellular fluid volume as the result of cold exposure(4).

Summary. Peri-renal adipose tissue may contain varying amounts of water, neutral fats and solids. The absolute amount of these constituents is a function of weight of tissue. Cold exposure in addition to depleting adipose tissue of neutral fat also decreases water content of fat free solids. Water and solids vary directly with each other and both vary inversely with amount of neutral fat present. It appears that water present in adipose tissue is located in tissue solids and is not associated directly with neutral fats; and that when neutral fats are added to adipose tissue they are added, with limits of this experiment, independently of water.

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Effect of Dietary Protein Quality on Alteration of Serum Proteins and Lipoproteins in the Rat.* (25534)

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The physiological importance of serum proteins and lipoproteins is not fully understood. Besides providing for maintenance of osmotic pressure(1) in serum, they provide transportation mechanisms for many water insoluble nutrients such as Vit. A(2), cholesterol(3) and steroid hormones(4) to sites of tissue utilization. While many infectious diseases have been shown to alter markedly the protein fractions of sera, comparatively little attention has been given to nutritional influences. In this study protein from several single sources was fed to rats to determine effects on serum protein and lipoproteins.

Method. Four groups of rats, 4 male and 6 female, 48 days old, were fed purified rations that contained casein, lactalbumin, gluten and zein respectively as primary protein source (Table I). After 38 days the rats were sacrificed and livers and kidneys removed and immediately weighed. Serum proteins and lipoproteins were electrophoretically separated on paper strips in a Durrum cell in sodium veronal buffer (pH = 8.6; u = .076) at 2.5 ma. for 16 hours. Serum proteins were dyed with bromphenol blue while lipoproteins were dyed with oil red O for 24 hours at 37°C. The per cent of total serum and lipoprotein of each fraction was determined by scanning with an analytrol (Beckman Instrument Co.)

TABLE I. Composition of Experimental Diets.

	Ration No.			
Constituents	1	2	3	4
	g			
Casein	180			
Lactalbumin		192.1		
Gluten			188.9	
Zein				190.1
Mineral mix	40	40	40	40
Brewers yeast	80	80	80	80
Fiber	50	50	50	50
Sucrose	600	584.8	594.9	575.6
Fat	50.0	53.1	46.2	64.3

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