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Many batches of proteinoid have been prepared for testing on animals. Some of the proteinoid tested was prepared at 170°, some at 195° C, while others are being made at 120° by much longer heating.

Thermal polymerization of amino acids to include proportions of threonine as high as 2.0% has been accomplished by using mixtures relatively rich in glycine (Mejido). This finding is being extended to determine if threonine and serine can be conserved in sufficient proportions for useful nutritional results.

Studies of digestibility of simpler combinations of amino acids polymerized by the thermal method are continuing (Wang, Nakashima). Suitable fractions of polyanhydro (glutamic acid, glycine, tyrosine) are found to be split by chymotrypsin and by pronase, although other fractions are resistant to these enzymes.

Tetrahymena pyroformis was the first organism on which nutritive efficiency was tested. Mrs. Priscilla Everett devoted time to the problem as a graduate student with some success. It appeared, however, that among other differences, the assimilation mechanism in a unicellular organism was so unlike that of mammals that the results obtained could very well not apply to human nutrition. We have, therefore, turned to the albino rat as the test organism.

Male, weanling rats weighing 50-60 grams have been procured from a commercial supplier. The animals have been fed ad lib (Mrs. Lench) on one of three diets, as indicated:

	I	II	III
Starch	70%	70%	56%
Veg. oil	10%	10%	14%
Fiber	6%	6%	0
Proteinoid	10%		
Ca		10%	27%
Vitamin B Complex			
Salts	4%	4%	3%
Cod liver oil	1%	1%	complete vitamin fortification see above

Three questions are of interest in connection with the proteinoids as dietary components and sole sources of complex nitrogenous compounds in the diet.

1. Are the compounds toxic?
2. Are the compounds palatable? Will the rats eat the diet containing them?
3. Are the compounds digestible and the products of digestion absorbable and utilizable for metabolic purposes? At present the answer to this question is being supplied by the growth curves of the animals fed proteinoid.

To date two experiments have been completed with the following results:

The first proteinoid fed showed no evidence of toxicity but it did not support growth in the rats. The test animals did not eat the material well but this did not appear to be the sole cause of lack of growth. For an eight day experimental period the average daily weight gain was for Diet I - 1.2 g loss, for Diet II - 3 g, and for Diet III - 7 g.

A second proteinoid preparation was physically mixed with 15% of DL-threonine. When this mixture was fed to weanling, male rats, it not only did not permit the animals to grow but appeared to be definitely toxic. Two of the four experimental animals died within the five day experimental period and the remaining two succumbed with two days after transfer to a complete diet (Diet III). In the next feeding trial, a smaller proportion of threonine (2-3%) is being incorporated.

All of the above results were obtained with proteinoid prepared thermally and supplemented. Nontoxicity on rats has been reaffirmed, but a nutritionally valuable mixture has not yet been identified. Leuchs proteinoids, known to be more immediately available to microorganisms, are being prepared by Dr. Hayakawa.