Effect of Crystalline Trypsin on the Raw Soybean Growth Inhibitor. (20330)

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In a previous report(1) we showed that trypsin (1-300) fed at 0.15% of the diet neutralized most of the effect of the growth inhibitor present when one-fourth of the protein in the diet of the chick was provided as raw soybean meal. This relative amount of raw meal caused practically as much growth inhibition as did higher proportions. It has been indicated that the substance in crude trypsin, which is able to reverse the action of the soybean growth inhibitor in rat diets, is not trypsin but some associated impurity(2). In a critical test of this question we have fed crystalline lyophilized trypsin in chick diets containing raw soybean protein.

Methods. The procedure was the same as previously described(1). Chicks were carefully selected for uniform size and vitality and then divided equally into pens of 9 each.

Results. The results of 2 experiments are given in Table I. These show a distinct increase in weight gains when the crystalline trypsin was added.

Discussion. It is not certain that the amount of trypsin added was optimal, but this amount was clearly sufficient to demonstrate the anti-inhibitor activity of highly purified trypsin. We have shown that a low level of trypsin may exert no discernible effect, presumably because a low level may be completely inactivated in the presence of a surplus of the antitrypsin known to be present in the raw meal(1). Enough trypsin must be added to neutralize the antitrypsin to the extent that proteolytic enzymes secreted by the animal may be allowed a moderate to complete freedom of action.

TABLE I. Effect of Crystalline Trypsin on the Growth Inhibition Caused by 5% Raw Soybean Protein in Chick Diets.*

Trypsin† added to 5% raw protein diet, %	Avg wt of chicks, g	
	Exp. 1, 25 days	Exp. 2, 27 days
.00	191.4	206.6
.05	223.9	244.3

* Diets contained a total 20% soybean protein plus 0.3% methionine.
† Worthington Biochemical Sales Co., crystallized, lyophilized trypsin.

1. Almquist, H. J., and Merritt, J. B., Proc. Soc. Exp. Biol. and Med., 1952, v79, 277.
2. Borchers, R., and Ackerson, C. W., Proc. Soc. Exp. Biol. and Med., 1951, v78, 81.

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Application of Thermistor to Measurement of Subcutaneous Temperatures During Hydrothermal Injury in the Rat.* (20331)

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During the course of experiments conducted in this laboratory on the biochemical changes in skin resulting from hydrothermal exposure of the anesthetized rat(1), it became necessary to obtain a continuous recording of the subcutaneous temperatures in areas of skin exposed at 50°-70°C. The present paper describes an apparatus incorporating a thermistor as the temperature-sensing element which has been used successfully during the past year for this purpose.

Development of the apparatus. In developing a suitable apparatus, it was recognized

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