1953

Concerning the Site of Nitrogen Absorption in Rats Fed Autoclaved or Raw Soybean Oil Mea

Raymond Borchers
University of Nebraska-Lincoln

Concerning the Site of Nitrogen Absorption in Rats Fed Autoclaved or Raw Soybean Oil Meal[1]

Raymond Borchers

Department of Agricultural Chemistry, University of Nebraska, Lincoln

Carroll, Hensley, and Graham (*1*) have concluded that much of the nitrogen absorption in rats fed raw soybean oil meal must take place in the cecum. This conclusion was reached from data showing that the apparent digestibility of raw soybean nitrogen in the terminal 20% of the small intestine was 32.65%, whereas in the feces the value was 76.96%. Values reported for apparent digestibility of heated soybean nitrogen were 78.66% and 81.78%, respectively. This observation presented a notable advance in explaining the lower nutritive value of raw soybeans compared with autoclaved soybeans. It therefore seemed advisable to repeat this work in order to determine the validity of the observations made.

The Cr_2O_3 index procedure was employed in a manner similar to that of Carroll *et al.* (*1*), with the following pertinent notations. The autoclaved and raw soybean rations contained 2.1% total nitrogen and were compounded as in previous studies (*2*). Rats of the Sprague-Dawley strain were fed the respective ration for a period of 4 days before being sacrificed.

TABLE 1

APPARENT DIGESTIBILITY OF SOYBEAN NITROGEN IN THE TERMINAL 20% OF THE SMALL INTESTINE

Series	No. of rats	Av wt (g)	Apparent digestibility ± SE (range) Soybean oil meal		t value
			Autoclaved (%)	Raw (%)	
1	20	126	73.35 ± 1.92 (52.7–84.8)		1.968*
	20	120		66.90 ± 2.66 (43.3–82.8)	
2	21	189	78.52 ± 0.93 (71.7–84.5)		1.644*
	18	186		75.17 ± 1.82 (59.1–86.5)	

* Not significantly different, t value according to Snedecor (*5*).

[1] Published with the approval of the director as Paper No. 584, Journal Series, Nebraska Agricultural Experiment Station.

The determination of Cr_2O_3 was carried out by the method of Schürch *et al.* (*3*), except that the dichromate color was read at 375 mμ, as suggested by Dansky and Hill (*4*).

The data accumulated in our experiments indicate that the apparent digestibility of raw soybean nitrogen was not significantly different from the apparent digestibility of autoclaved soybean nitrogen when determined by the Cr_2O_3 index method in the terminal 20% of the small intestine of the rat. The results are presented in Table 1.

References

1. CARROLL, R. W., HENSLEY, G. W., and GRAHAM, W. R. *Science*, **115**, 36 (1952).
2. BORCHERS, R., and ACKERSON, C. W. *Proc. Soc. Exptl. Biol. Med.*, **78**, 81 (1951).
3. SCHÜRCH, A. F., LLOYD, L. E., and CRAMPTON, W. E. *J. Nutrition*, **41**, 629 (1950).
4. DANSKY, L. M., and HILL, F. W. *Ibid.*, **47**, 449 (1952).
5. SNEDECOR, G. W. *Statistical Methods*. Ames, Iowa : Iowa State Coll. Press (1946).

Manuscript received September 22, 1952.