



Figure 1. Regression of nutritive index on lysine with free ϵ -amino groups

Grams per 16 grams of nitrogen

nose, when added to CM-71-A, seemed to reduce the effects of gossypol, as there was no greater lowering of the nutritive index on heating CM-71-ARG than that noted for CM-71-AR (Table I).

A correlation coefficient of 0.86 (with 16 degrees of freedom) was calculated from regression analysis of the lysine data obtained by the DNFB method and the nutritive index. The curve for the regression of the nutritive index on the lysine content of the meals, as determined by the method of Conkerton and Frampton (7), is shown in Figure 1. The correlation between the nutritive index and the lysine content as determined by Moore and Stein (13) was 0.50. The lysine datum obtained by the DNFB method is interpreted here as the quantity of lysine in the meal protein with the ϵ -amino group free. The difference between this datum and the measure of lysine obtained by the ion exchange procedure apparently determines that portion of the lysine in the protein where the ϵ -amino group is not free, but can be liberated on acid hydrolysis. This is referred to as bound lysine.

The implication from the two regression analyses is that protein-depleted

rats may not utilize the lysine of the protein if the ϵ -amino groups are not free. This view is supported by the results of a multiple regression analysis of the destroyed lysine and the bound lysine on the reduction in the nutritive index. The regression equation obtained from the analysis is

$$R = 9.6 + 24.9d + 15.1b$$

where R is the reduction in the nutritive value obtained with the various treatments, d is the quantity of lysine destroyed, and b is the quantity of lysine bound expressed as grams per 16 grams of nitrogen. The coefficient for b would be zero if the depleted rat utilized all of the bound lysine. The reduction in nutritive value in processed cottonseed is due, therefore, not only to lysine destruction but to lysine binding as well.

Acknowledgment

The authors thank Scott C. McMichael of the U. S. Cotton Field Station, Shafter, Calif., for supplying the gland-free cottonseed, and Edith J. Conkerton, J. F., Jurgens, H. P. Pastor, J. A. Harris, and V. O. Cirino for some of the analyses reported.

Literature Cited

- (1) Am. Oil Chemists' Soc., Chicago, Ill., "Official and Tentative Methods of Analysis," 2nd ed., rev. to 1958, V. C. Mehlenbacher and T. H. Hopper, eds., 1946-58.
- (2) Assoc. Offic. Agr. Chemists, Washington, D. C., "Official Methods of Analysis," 8th ed., 1955.
- (3) Cabell, C. A., Earle, I. P., *J. AGR. FOOD CHEM.* **2**, 787 (1954).
- (4) Cannon, P. R., Humphreys, E. M., Wissler, R. W., Frazier, L. E., *J. Clin. Invest.* **23**, 601 (1944).
- (5) Condon, M. Z., Jensen, E. A., Watts, A. B., Pope, C. W., *J. AGR. FOOD CHEM.* **2**, 822 (1954).
- (6) Conkerton, E. J., Frampton, V. L., *Arch. Biochem. Biophys.* **81**, 130 (1959).
- (7) Conkerton, E. J., Martinez, W. H., Mann, G. E., Frampton, V. L., *J. AGR. FOOD CHEM.*, **5**, 460 (1957).
- (8) Frampton, V. L., Dechary, J. M., Kuck, J. C., Altschul, A. M., *J. Am. Oil Chemists' Soc.* **35**, No. 8, 18 (1958).
- (9) Gonzales del Cueto, A., Martinez, W. H., Frampton, V. L., *J. AGR. FOOD CHEM.*, **8**, 331 (1960).
- (10) Lyman, C. M., Chang, W. Y., Couch, J. R., *J. Nutrition* **49**, 679 (1953).
- (11) Martinez, W. H., Frampton, V. L., *J. AGR. FOOD CHEM.* **6**, 312 (1958).
- (12) McMichael, S. C., *Agron. J.* **51**, 630 (1959).
- (13) Moore, S., Spackman, D. H., Stein, W. H., *Anal. Chem.* **30**, 1185 (1958).
- (14) Pons, W. A., Jr., Pittman, R. A., Hoffpauir, C. L., *J. Am. Oil Chemists' Soc.* **35**, 93 (1958).
- (15) Pons, W. A., Jr., Stansbury, M. F., Hoffpauir, C. L., *J. Assoc. Offic. Agr. Chemists* **36**, 492 (1953).

Received for review February 23, 1960. Accepted May 6, 1960. Southwest Regional Meeting, ACS, Baton Rouge, La., December 3-5, 1959.

Correction

Constitution of the Hemicellulose of Alfalfa (*Medicago sativa*). Hydrolysis of Hemicellulose and Identification of Neutral and Acidic Components

In this article by D. V. Myhre and Fred Smith [*J. AGR. FOOD CHEM.* **8**, 359 (1960)], the formulas, which are referred to throughout the text by Roman numerals, were inadvertently omitted. Formulas I through VII are shown below.

