

Letter to the Editor

Antibiotics and Folic Acid

Dear Sir:

As part of a series of studies to establish normal metabolic patterns for preadolescents,* urinary folic acid was determined for thirty-five girls ranging in age from seven to nine years. The assay method employed was that described by Toepfer et al. (USDA Handbook No. 29, 1951) except that enzymatic treatment of the samples was omitted. *Streptococcus faecalis* (ATCC 8043) was routinely employed as the assay organism.

During the course of one study, infections developed in some of the girls for which the attending physician administered antibiotics. Four of the thirteen girls were given Cosatetracyclin[®], and subsequent urine samples from these four girls were found to contain only trace amounts of folic acid when *Str. faecalis* was used as the assay organism. However, when the same samples were tested with *Lactobacillus casei* (ATCC 7469) as the assay organism, all but one were shown to contain folic acid within the average range of 1.1 to 1.4 $\mu\text{g.}$ per twenty-four hours. Thus, during these infections, the excretion of folic acid did not appear to be lowered.

Preliminary studies have indicated that under the conditions of testing, *Str. faecalis* is considerably more sensitive to Cosatetracyclin than *L. casei*. The comparative growth of *L. casei* and *Str. faecalis* in the presence of Cosatetracyclin, obtained with the basal medium of Toepfer et al. and an incubation time of eighteen hours, was as follows:

Cosatetracyclin per Tube ($\mu\text{g.}$)	Optical Density	
	<i>L. casei</i>	<i>Str. faecalis</i>
0	0.98	0.56
5	0.95	0.52
10	0.96	0.43
25	0.92	0.29
50	0.90	0.20
75	0.89	0.14
100	0.84	0.10
500	0.24	0.0

There is some indication that the observed difference in sensitivity to Cosatetracyclin may be related to the temperature of incubation (30°C. for *Str. faecalis* and 37°C. for *L. casei*) and certain differences in the assay medium, but this point remains to be investigated further.

Therefore, while these results indicate an approach to the problem of obtaining reliable estimates of urinary folic acid in the presence of a specific antibiotic, the over-all problem and its relation to the successful completion of metabolic studies would appear to merit further attention. The relative sensitivity of various assay organisms to the presence of antibiotics or their metabolic derivatives in urine should be investigated. Furthermore, it would appear to be extremely useful for nutrition studies to have antibiotic-resistant strains of those organisms commonly used for the assay of vitamins and amino acids.

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* PACE, J. K., STIER, L. B. TAYLOR, D. D. and GOODMAN, P. S. Metabolic patterns in preadolescent children. v. Intake and urinary excretion of pantothenic acid and of folic acid. *J. Nutrition*, 74: 345, 1961.