

Effect of the Vitamin B Complex in Diabetes Mellitus¹

G. BERNARD ROBSON, M.D., WINDSOR
C. CUTTING, AND HORACE GRAY, M.D.

*From the Departments of Medicine
and of Pharmacology of the Stanford
University School of Medicine, San
Francisco, California*

BECAUSE MEMBERS of the vitamin B complex are concerned in carbohydrate metabolism, it has been suggested that they might have an ameliorating effect in diabetes mellitus. Clinical trials (1) with thiamine hydrochloride have been disappointing, but in experimental diabetes, Chaikoff and Kaplan (2) have shown that the administration of whole vitamin B complex prolongs the life of depancreatized dogs. We have, therefore, tried the vitamin B complex in clinical diabetes, but without benefiting the condition.

METHODS

Assessing the effect of a therapeutic measure in diabetes is difficult because of the great fluctuations in severity which many patients manifest. Elderly diabetics, in particular, often may take 20 to 30 units of insulin daily less than their true requirement, and only gradually over weeks develop marked glycosuria. The effect of infections is likewise well-known. It is possible that serial glucose tolerance tests would be the most accurate criterion for judging the condition of a diabetic, but such tests were not made in our patients. Patients in two principal categories were used. a). Those who took no insulin but had glycosuria, in whom improvement could be shown by a decrease in the amount of sugar lost in the urine. b). Those taking insulin, who could be rendered sugar-free, or could have their dose of insulin reduced.

Only patients were chosen whose long (months to years) attendance in the Diabetic Clinic had led to more or less constant values for body weight, insulin dosage (doses varied from 0 to 120 u daily) and degree of glycosuria (from none to 3 plus by Benedict's test). The patients were observed at weekly or bi-weekly intervals while taking the vitamin B preparation. During subsequent periods when the vitamin

preparation was withdrawn a placebo resembling the vitamin preparation was given.

The vitamin B complex, a heavy syrup obtained from rice bran, was given in a dose of one ounce daily.² This amount contained the following quantities of vitamins: thiamine hydrochloride, 4.5 mg.; riboflavin, 300 micrograms; vitamin B₆, 4.5 mg.; nicotinic acid, 60 mg.; pantothenic acid, 12 mg.; the filtrate factor (Jukes-Lepkovsky) was 28 per cc.

RESULTS AND DISCUSSION

Twenty-one patients were given the vitamin B complex for periods of from 3 to 16 weeks, with the results shown in table 1. There was no significant change in weight, glycosuria or insulin requirement. The slight increases or decreases noted were only 1 or 2 pounds of body weight, a change of one plus in the Benedict's reaction, or a change in insulin dosage of 2, or at most 4 units.

Although both insulin and members of the vitamin B complex are involved in carbohydrate metabolism, and may to some extent be supplemental as demonstrated in animal experiments, this summation of action could not be shown in diabetic patients. Many of the patients felt better generally, especially, in that they slept better and their appetites improved. This is to be interpreted as a rectification of an unrecognized deficiency state rather than as amelioration of the diabetes.

CONCLUSIONS

Large doses of a potent vitamin B complex preparation, given for periods up to 16 weeks to diabetic patients, had no discernible effect on the severity of the disease.

REFERENCES

1. SMITH, K. A., AND H. L. MASON: Thiamin and diabetes mellitus. *Proc. Staff Meet., Mayo Clin.* 15: 529. 1940.
2. CHAIKOFF, I. L., AND A. KAPLAN: On the survival of the completely depancreatized dog. *J. Nutrition.* 14: 459. 1937.

Received for publication March 4, 1942.

¹ Assisted in part by the Rockefeller Fluid Research Fund and an Anonymous Fund for the Study of Diabetes of the Stanford University School of Medicine.

² The vitamin B complex (Galen "B"), and the placebo used were furnished by the Galen Laboratories of Berkeley, California.

TABLE I. COMPARISON WITH PREVIOUS CONTROL PERIODS

Patient	Drug ¹	Duration of Medication, Weeks	Insulin Requirement	Glycosuria	Body Weight	Remarks
1	B P	12 2	Same Same	Slight decrease Slight increase	Same Same	Feels and sleeps better
2	B P	12 12	Same Same	Same Same	Same Same	
3	B P	12 12	Same Same	Same Same	Same Same	Feels the same
4	B P N	12 4 6	Same Same Same	Same Same Same	Same Same Same	Feels the same Feels the same Feels the same
5	B N	5 11	Slight decrease Same	Same Same	Slight decrease Same	Feels better Feels better
6	B N	3 12	Increased Increased	Increased Same	Same Decreased	Feels the same Feels the same
7	B P	16 6	Same Same	Same Same	Same Same	Feels better; appetite better
8	B N	12 2	Slight increase Same	Same Same	Same Same	Feels same; appetite better Appetite better
9	B P	15 4	Same Same	Same Same	Same Same	Feels worse
10	B	3	Same	Same	Same	
11	B P	12 8	Same Slight increase	Same Same	Same Same	
12	B	8	Same	Same	Same	
13	B B	16 8	Same Same	Same Same	Same Slight increase	
14	B P	4 4	Same Same	Same Slight increase	Same Same	
15	B	16	Same	Same	Slight increase	
16	B	8	Slight increase	Same	Same	Feels better
17	B	8	Same	Same	Same	
18	B P	8 4	Same Same	Same Same	Same Same	
19	B	4	Same	Same	Same	Feels the same
20	B P	12 8	Increased Increased	Same Same	Same Same	
21	B	4	Same	Slight increase	Slight decrease	
22	B P	12 8	Same Same	Same Same	Same Same	

¹ B, vitamin B complex; P, placebo; N, neither vitamin nor placebo.