

in the inoculated flasks containing the larger quantities of the latter two compounds. Under similar conditions sulfanilamide and sulfapyridine exhibited a moderate bacteriostatic action but these compounds were distinctly inferior to the thiazol derivatives against the staphylococcus in the drug concentrations used. Under different experimental conditions Bliss and Long⁴ reported that sulfanilamide and sulfapyridine were ineffective in their *in vitro* action upon *Staphylococcus aureus*.

Summary. Three new thiazol derivatives of sulfanilamide have been studied with respect to their bacteriostatic action upon microorganisms. These compounds were found to be superior to sulfanilamide and sulfapyridine in their inhibitory actions upon pneumococci Types I, II and III and beta *Streptococcus hemolyticus* Group A in concentrations as low as 5 mg %. Concentrations of 1 mg % proved the new derivatives to be more effective against the gonococcus than the parent compound and sulfapyridine. The methyl and phenyl derivatives were found to be markedly bacteriostatic for *Staphylococcus aureus*. Sulfanilamide and sulfapyridine exhibited a moderate degree of inhibition upon the latter organism.

11108

Negative Effect of Synthetic Vitamin B₆ Hydrochloride in Nutritional Deficiency in Man.*

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(Introduced by George R. Minot.)

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Spies and his associates¹ have recently reported observations on 4 patients with pellagra, who following treatment with nicotinic acid, riboflavin and thiamin chloride while they were taking a deficient diet, continued to complain of nervousness, insomnia, irritability, abdominal pain, weakness and difficulty in walking. These symptoms were relieved within 4 hours by a single dose of 50 mg of synthetic vitamin B₆ hydrochloride (2-methyl-3-hydroxy-4, 5-(hydroxymethyl)-pyri-

⁴ Bliss, E. A., and Long, P. H., *PROC. SOC. EXP. BIOL. AND MED.*, 1938, **39**, 483.

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¹ Spies, T. C., Bean, W. B., and Ashe, W. F., *J. Am. Med. Assn.*, 1939, **112**, 2414.

TABLE I.
Summary of Clinical and Hematological Findings in Six Patients with Nutritional Deficiency Disease Treated with Synthetic Vitamin B₆ Hydrochloride.

Patient	Sex	Age	Clinical diagnosis	Per day therapy prior to and during administration of synthetic Vitamin B ₆ Hydrochloride				Residual signs and symptoms prior to and during administration of synthetic Vitamin B ₆ Hydrochloride
				Ferrous Sulfate, g	Nicotinic Acid, mg	Riboflavin, mg	Thiamin Chloride, mg	
1	M	64	"Alcoholic" Pellagra	0.4	—	—	—	Dermatitis, sore tongue, sore mouth, irritability, weakness, neuritis
2	M	47	Endemic Pellagra†	0.4	100	2.5	20	"Neuritic" pains, paraesthesias, weakness, insomnia, anorexia
3	F	65	Endemic Pellagra†	0.4	500	10	10	Insomnia, weakness, anorexia, irritability
4	M	39	"Alcoholic" Pellagra†	0.4	500	2.5	100	"Neuritic" pains, paraesthesias, weakness, insomnia
5	F	49	"Idiopathic" Hypochromic Anemia	—	—	—	—	Dysphagia, weakness
6	F	53	Nutritional Macrocytic Anemia†	0.4	500	—	10	Weakness, fatigue, dyspnea

Patient	Total amount of synthetic Vitamin B ₆ Hydrochloride administered*		Duration of therapy in days	Hematological findings before and after treatment with synthetic Vitamin B ₆ Hydrochloride			
	Oral	Intravenous		Red blood cells, millions/mm ³	Hemoglobin, g (Sahli)	Mean corpuscular volume, cubic micra	
1	350	1120	15	Before After	3.45 3.83	12.24 12.24	101.1 94.5
2	—	130	6	Before After	4.07 4.25	14.56 14.56	103.9 103.1
3	—	760	22	Before After	3.40 3.45	11.23 11.39	97.6 97.3
4	—	330	14	Before After	3.57 3.82	12.32 12.55	100.4 97
5	320	1140	21	Before After	4.57 4.40	8.74 8.58	67.2 65.9
6	940	—	10	Before After	2.09 1.81	8.19 7.64	120 118.2

*In the form of a fresh solution in 0.85% sodium chloride.

†The dermatitis presented by these patients had subsided prior to the vitamin B₆ administration.

‡This patient had a maximum reticulocyte response following injection of intramuscular liver extract.

dine) intravenously. Fouts and his coworkers² have reported the development of a microcytic hypochromic anemia in puppies taking a synthetic diet deficient in vitamin B₆, which was cured by the administration of this factor.

This communication records observations on the ineffectiveness of synthetic vitamin B₆ hydrochloride† administered to 6 patients with nutritional deficiency of types described in Table I, 5 of whom had very definite anemia.

Each patient on admission to the hospital was placed on a standard 3000 calorie diet containing only traces of the water soluble vitamins. Reticulocyte counts were done daily and counts of the red and the white blood cells and hematocrit and hemoglobin determinations were made every other day. The clinical and hematological findings are summarized in Table I. There was no evidence of a reticulocyte response in any case and the reticulocytes were always less than 2%.

Four of the patients received ferrous sulfate, nicotinic acid, thiamin chloride, riboflavin and ascorbic acid prior to and during vitamin B₆ therapy. These substances were given in order that a possible synergistic effect might not be overlooked. No toxic symptoms were encountered referable to vitamin B₆ administration in the doses tabulated.

In none of the 6 cases was any improvement observed either in the anemia or in the subjective symptoms and objective signs following vitamin B₆ administration.

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² Fouts, P. J., Helmer, O. M., Lepkovsky, S., and Jukes, T. H., *J. Nutrition*, 1938, **16**, 197.

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