

The acid and alkaline spectra of the pigment are presented in Fig. 1. The alkaline spectrum has a peak at 470 m μ . The acid spectrum exhibits peaks at 535 m μ and 295 m μ and a shoulder at 510 m μ . These results are in agreement with published spectra for bacterial prodigiosin³. Chromatographic comparison of the bacterial and actinomycete pigment in various solvents⁴ showed that the same components were present in each although the relative amounts varied.

The results demonstrate that actinomycetes of the genus *Streptomyces* producing prodigiosin are present in soils. Prodigiosin was isolated, and is qualitatively equivalent to the bacterial pigment, although differences in relative quantities of the components do exist.

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PHYSIOLOGY

Vitamin-Levels in Blood and Serum

EXCEPT for folic acid and cyanocobalamin (vitamin B₁₂) only scattered information can be found in the literature on the content of water-soluble vitamins in human blood and serum^{1,2}. In order to establish basic values of normal blood and serum vitamin for various clinical investigations, microbiological assays were carried out for a number of vitamins by the methods which we have developed.

Blood was obtained from an antecubital vein and permitted to clot at room temperature for 3 hr. After centrifugation, serum was withdrawn for assay. Care was taken to obtain serum free of any haemolysis; intracellular contents gave erroneous values. Citrated blood was used for whole-blood assays. Blood and serum were assayed for (a) B₁₂ with *Ochromonas malhamensis*^{3a}, (b) folic acid with *Lactobacillus casei*^{3b}, (c) unconjugated pteridines with *Crithidia fasciculata*^{3c}, (d) thiamine with *O. malhamensis*^{3d}, (e) nicotinic acid with *Tetrahymena pyriformis*^{3f}, (f) pantothenic acid with *L. plantarum*^{3e}, and (g) vitamin B₆ with *T. pyriformis*^{3e}. Table 1 gives the range encountered both in whole blood and in serum of 28 normal subjects. The whole-blood values for folic acid, unconjugated pteridine, thiamine, nicotinic acid, and perhaps for the B₆ group (Table 1) are higher than those for serum; the reverse is true for B₁₂. Nicotinic acid activity almost wholly resides in the cellular elements of the blood.

The folic acid activity of serum, not whole blood, serves as an index of clinical folic acid deficiency^{3b}. In blood of normal subjects the cells carry 1/5-1/6

Table 1. VITAMIN ACTIVITIES OF WHOLE BLOOD AND SERUM (μ G.M./ML.)*

Vitamin	Whole blood	Serum
B ₁₂	0.12-0.45	0.14-0.64
Folic acid	14-72	7-27
Unconjugated pteridine	27-70	11-43
Thiamine	20-41	3-15
Nicotinic acid	4,900-9,600	50-80
Pantothenic acid	230-2,075	200-1,650
B ₆ group	26-78	26-43

* Based on 28 normal subjects.

the total B₁₂; in pernicious anaemia their share is 1/2-1/3^{4a,b}. Serum B₁₂-levels reflect the tissue supply.

In other work, we have observed exceptionally high levels of unconjugated pteridines in sera from patients with gout, while folic acid activity was in the normal range. The normal values presented here have also served as controls in comparative work on the vitamin content in maternal versus foetal blood^{5a,b} and for comparison with the cerebrospinal fluid values in patients with neurologic disease^{5a,b}.

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Aldosterone Excretion and Potassium Retention in Subjects living at High Altitude

It has been shown¹ that during a prolonged stay at altitudes above 15,000 ft. there is an increase in the salivary excretion of sodium and a decrease in that of potassium. In one subject this change in salivary electrolyte composition showed a marked acclimatization effect (Fig. 1). These findings suggested that, on arrival at a high altitude, the level of circulating aldosterone was likely to be greatly reduced, but that there would probably be a tendency for it to return slowly towards normal values with passage of time.

During July and August 1960, members of the Middlesex Hospital Medical School High Altitude Physiological Expedition spent twenty-four days at an altitude of 14,300 ft. on Mont Blanc². 24-hr. urine collections were made from seven subjects (four men and three women). These specimens were frozen and sent in 'Styrocell' insulated containers by air to London, where they arrived still solid.