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Blood Changes Following Injections of Typhoid-Paratyphoid Vaccine.

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In a study of the reactions produced in non-febrile patients by intravenous injections of typhoid-paratyphoid vaccine (given therapeutically for ocular inflammations¹) we have verified certain findings reported by other workers, and made other observations not hitherto reported. Food was not eaten immediately before and during the period of the investigations, but water was taken freely in uniform amounts every hour. The patients were given from 3 to 11 vaccine injections, on an average of one dose every second or third day. The dosage was so calculated as to produce approximately the same temperature reactions throughout the treatment. This was generally accomplished by doubling the size of the preceding injection. The fever produced by the first dose lasted on an average for about 36 hours; the fever following the second dose generally disappeared in 18 hours; the fever period for subsequent doses covered about 10 or 12 hours.

About 30 minutes after the injection the patient developed a chill and a leucopenia. In several cases the leucopenia dropped as low as 1500, and was characterized by a fall chiefly in the polymorphonuclears. About two hours later the leucocyte count had returned to normal and then began a leucocytosis (mainly polymorphonuclear), in some cases rising as high as 35,000. The fever usually coincided with the leucocytosis and reached its maximum in five to eight hours after the injection, and then gradually fell by lysis.

During the stage of the chill and leucopenia there was a perceptible fall in the systolic blood pressure, and an approximately proportionate rise in the diastolic pressure. During the stage of the fever and leucocytosis the original systolic pressure was quite uniformly maintained, but there occurred a marked drop in the diastolic pressure, its low point coinciding with the high point of the fever and leucocytosis.

We also tested the antithrombic power of the patients' plasma, and uniformly found the same marked increase in antithrombin as was observed² in cases of typhoid fever. This increase began with the chill and was maintained during the rising phase of the fever,

but disappeared quickly as the temperature began to fall. This phenomenon was accompanied by a prolongation of the bleeding time.

Studies on the viscosity of the blood also were made in the hope of discovering the factors responsible for the leucopenia and the leucocytosis, but no constant variations were observed.

This is a preliminary report.

¹ Howard, H. J., *China Med. J.*, 1927, xli, in press.

² Mills, C. A., and Kitzmiller, K. V., *Arch. Int. Med.*, 1926, xxxviii, 544.

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Is Uricase Present in Soy Beans?

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Némec (1920) reported that a very "active" enzyme, uricase, is present in soy beans, and formulated an oxidative process of decomposing uric acid with the formation of urea. Horvath² (1926) remarks that this process may be a possible source of error in the determination of urea nitrogen in blood by the aeration urease method. Since this method has gained wide popularity, it is important to know whether uricase is present or absent in soy beans. Takeuchi and various other workers have reported that the aqueous extract of soy bean had no action on uric acid and many other protein derivatives.

Experiments were arranged under conditions exactly the same as those described by Némec.¹ Potassium urate was dissolved in boiling water (0.3 gm. in 100 cc.). Chinese yellow soy beans were ground to a fine powder, 5 grams of which were poured into an Erlenmeyer flask. Then 100 cc. of the potassium urate solution were added, followed by 5 cc. of toluol. The flask was fitted with a rubber stopper carrying a 3 inch tube and a bubbling tube reaching nearly to the bottom of the flask. The air, after being filtered through glass wool and 10 per cent sulphuric acid (Némec used sublimate) was led into the flask at a rate of 25 liters per 24 hours. In the control flask, 100 cc. of distilled water were used in lieu of potassium urate solution. The ammonia formed was received in a similar flask containing N/50 sulphuric acid. The temperature was