NEW LIMITATION CHANGE

TO
Approved for public release, distribution unlimited

FROM
Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; SEP 1968. Other requests shall be referred to Department of the Army, Fort Detrick, Attn: SMUFD-AE-T, Frederick, MD 21701.

AUTHORITY
Army Biological Defense Research Lab ltr dtd 13 Sep 1971
This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of Commanding Officer, Fort Detrick, ATTN: SMUD-AE-T, Frederick, Md. 21701.

DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland
Contributions to the Technique of Agglutination-tests. Beitrage zur Agglutinationstechnik, by W. Gashgens

In particular cases for the treatment of diseases which are suspected to be typhus, for example on differential diagnostic bases, the greatest possible speed in accomplishment of the agglutination-reaction is a great desideratum. Through the following simple method, the details of which will be published in the "Arbeiten aus den kaiserlichen Gesundheitsamte," the duration of observation will be shortened, so that after only 10 minutes one can have positive knowledge of the properties of the serum.

A tube is prepared in the usual manner with the patients serum, physiological saline and bacterial-suspension, while a second saline and bacterial suspension serves as control. Both tubes are centrifuged 10 minutes, afterwards thoroughly examined, 3-4 times shaken to uniformity, and thereupon examined once more both microscopically and macroscopically.

In the control tube after the centrifuging a vanishingly small part of the bacteria are centrifuged-out, this part being visible as a sharply defined mass of sediment about 2 mm. in diameter. After 3-4 times shaking, this mass is completely dispersed, so that microscopically, in hanging drops, only single bacteria, or here and there clumps of 2 or 3 bacteria, are visible. The same conformation can be seen in the serum-tube, if the reaction is negative.

In the serum tube with positive reaction a part of the bacteria gather at the bottom of the tube as sediment, around which in a characteristic way the bacilli arrange themselves, united as a floculon in which they, depending on the agglutination-strength of the serum, form small point-like flecks, or a single mass
which exceeds the size of the mass of sediment of the control tube by two or 
three times. After shaking, most of the macroscopically visible floccules settle 
back to the bottom. Only in the case of a low-value serum, in which, for 
example, the bacteria agglutinate only after five hours, do the floccules dis-
sipate upon shaking, and these again are detectible upon microscopic examination.

In the microscopic examination it is strictly to be noted that only small 
clumps, which after superficial examination can be seen to consist of at least 
10 individuals, can be taken to indicate a positive reaction.

Moreover, a large number of such clumps must be visible in the drops, whose 
volume and size depends naturally on the agglutination-strength of the serum.

I have used this method in more than 100 agglutination-tests, of which 
about half were negative, and half positive. For comparison, all the sera were 
tested also in the "old" manner (by my co-assistant Dr. Fornet, whom I thank), 
in which the tubes were held for 4 to 5 hours at 37 degrees C and eventually still 
longer 12 hours at room temperature. The very same results were obtained in the 
two series.