

UNITED STATES PATENT OFFICE.

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PROCESS OF PRODUCING A REMEDY FOR TUBERCULOSIS.

1,050,299.

Specification of Letters Patent.

Patented Jan. 14, 1913.

No Drawing. Original application filed July 18, 1910, Serial No. 572,638. Divided and this application
filed September 26, 1911. Serial No. 651,401.

To all whom it may concern:

Be it known that I, WILHELM RUPPEL, Ph. D. and professor of medicine, a citizen of the Empire of Germany, residing at Höchst-on-the-Main, Prussia, of the Empire of Germany, have invented certain new and useful Improvements in Processes of Producing a Remedy for Tuberculosis, of which the following is a specification.

10 Specific antituberculosis-serum, such as for instance that obtained according to my U. S. patent application Ser. No. 572,638, filed July 18, 1910, contains immune bodies which act on tubercle-bacilli and other prepa-

15 rations derived therefrom. As the treatment of tuberculosis in the serum-therapeutic way always offers difficulties by complications arising in the incorporation of albumins, it seemed advisable to isolate the immune bodies from the serum. In this respect tubercle-bacilli are loaded with the serum, whereby combination of the im-

20 mune bodies with tubercle-bacilli takes place. To that effect, it was first ascertained by the usual methods what amount of the various specific immune bodies were contained in the antituberculosis-serum to be extracted. It was found that for this purpose it is sufficient to determine as exactly

25 as possible the agglutinating power of the serum and to find by calculation the quantity of serum which is able to act on a certain amount of tubercle-bacilli. Thus, for instance, we proceed as follows: 1 gr. of triturated tubercle-bacilli is made into an emulsion with 500 c. c. of physiological salt solution. Thus 1 c. c. of this emulsion contains 0.002 gr. of tubercle-bacilli material. Into a series of test-tubes, each of which

30 contains 1 c. c. of this tubercle-bacilli emulsion, diminishing quantities of the specific serum are added, in order to determine the smallest quantity of serum required for the complete agglutination of the said quantity of tubercle-bacilli. If, for instance, 0.002

35 gr. of this tubercle-bacilli are completely agglutinated by 0.0025 c. c. of serum, then corresponding quantities of tubercle-bacilli and antituberculosis-serum, preferably an

40 excess of the latter, are used for the preparation of the remedy. In a similar manner the amount of complement fixing sub-

stance, opsonins or bacteriotropins contained in the antituberculosis-serum is ascertained. Also by this preliminary 55 test the best combination of antituberculosis-serum and tubercle-bacilli can be determined. The mixture of immune antitubercle-serum and tubercle-bacilli combined according to the foregoing preliminary test 60 are allowed to stand in an incubator at 37.5° C. for 24 to 48 hours. The bacilli are thereby loaded with immune bodies and rendered non-toxic. Then they are shaken together with glass beads in a shaking apparatus 65 until no intact tubercle-bacilli can be microscopically detected. When the tubercle-bacilli are so far altered, they are separated from the superfluous serum by centrifugating. To these tubercle-bacilli physiological 70 salt solution and glycerin are added in the proportion of, for instance, 1:200, to form a fine emulsion. These emulsions of sensitized tubercle-bacilli are used as a remedy for tuberculosis. It has been proved that 75 tuberculous patients stand injections thereof without any febrile reaction and obtain permanent improvement.

This application is a division of my specified prior one, Ser. No. 572,638. 80

Having thus described the nature of my invention what I claim is:

The process of producing emulsions of sensitized tubercle-bacilli as a remedy for tuberculosis, consisting in causing a specific 85 antituberculosis-serum to act upon tubercle-bacilli, so that the tubercle-bacilli are rendered nontoxic and loaded with specific immune bodies, shaking the mixture of sensitized tubercle-bacilli and serum for a long 90 time with insoluble inert hard material in a shaking apparatus until the bacilli are perfectly triturated, separating serum and bacilli by centrifugating, and mixing the isolated bacilli with suitable quantities of salt 95 solution and glycerin, so as to form an opalescent milky liquid.

In testimony whereof, I affix my signature in presence of two witnesses.

WILHELM RUPPEL.

Witnesses:

JEAN GRUND,
CARL GRUND.