THE PREPARATION OF FORMOL TOXOID AND ALUM PRECIPITATED TOXOID.


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To produce tetanus toxoid, Cl. tetani is grown in broth containing Witte peptone for a period of from five to fourteen days; the optimum period for harvesting is dependent on the strain and is determined by frequent examinations of the filtrates from the cultures by means of the flocculation test. The toxin has an L+ dose in mice of 0.02 to 0.012 cubic centimetre and an Lf value of 5 to 8. The cultures are filtered through Berkefeld "N" candles after preliminary clarification through paper pulp, 0.3 per cent of formalin (= 40 per cent formaldehyde) is added to the filtrate and the latter is incubated at 37°C. Toxoiding requires about three weeks, and is regarded as complete when 5 cubic centimetres injected subcutaneously into a guinea-pig produces no symptoms of tetanus; the animal is kept under observation for three weeks before the toxoid is finally passed. The toxoid is submitted to the sterility tests prescribed by the Therapeutic Substances Act; and also to a special series designed to detect the presence of Cl. tetani.

Further preparation of the toxoid is carried out in a room remote from the building in which the cultural work is carried out. Here it is again filtered through Berkefeld "N" candles, filled into containers, and submitted to the T.S.A. tests.

Alum precipitated toxoid is prepared from the formol toxoid described above. Preliminary tests are made to determine the optimum amount of alum required, by adding varying amounts of the latter to a fixed amount of toxoid; when the precipitate has settled, the supernatant fluid is tested to determine the presence or absence of toxoid; and from these results is obtained the smallest quantity of alum required to completely precipitate the toxoid.

The necessary amount of potash alum is added to the bulk of the toxoid; the two are thoroughly mixed, and allowed to stand overnight. By the morning the precipitate containing the toxoid has settled; it is adequately washed with saline and sodium phosphate and antiseptic added. The solutions used for the washing process are previously sterilized by autoclaving and the operations are carried out aseptically. The final product is tested for sterility by the official tests and by the additional special anaerobic tests as used for formol-toxoid. If satisfactory, it is filled into containers and again sterility-tested before issue.