



SPIEZ LABORATORY

CH-3700 Spiez

Tel +41 (0)33 228 14 00

Fax +41 (0)33 228 14 02

laborspiez@gr.admin.ch

www.vbs.admin.ch/ls

GRUPPE RÜSTUNG
GROUPEMENT DE L'ARMEMENT
AGGRUPPAMENTO DELL'ARMAMENTO
DEFENCE PROCUREMENT AGENCY



Fact Sheet Botulism

Toxin from the pathogen *Clostridium botulinum*

Occurrence:

There are various naturally-occurring forms of botulism including foodborne botulism and wound botulism. Another artificial form of botulism appears in the form of dust (aerosol) of the botulinum toxin, called inhalation botulism. All forms of botulism result from the uptake of toxins in the body. It does not enter the body through the skin.

Botulinum toxin is the most poisonous toxin currently known to man, and is found in minimal quantities for medical use (eye operations).

Identification:

The apparent neurological effects of all forms of botulism are ptosis (drooping eyelids), diplopia (double or blurred vision), and often abnormal dilation of the pupils, dysarthria (speech difficulty), dysphonia (hoarseness) and dysphagia (difficulty swallowing).

Dry mouth can be another symptom. With increasing paralysis, loss of control of the head, hypotony (circulatory weakness) and general weakness become the most important symptoms. The toxin does not cross the blood-brain barrier, and the patient shows no signs of confusion. If left untreated, death occurs due to respiratory failure.

Diagnosis:

- Toxin, antibody: immunological test (ELISA, Enzyme-linked Immunosorbent Assay), results within hours;
- Pathogen: bacteriological (isolation by culture); results in approx. 2 days.

Transmission:

- Botulism is not transmissible from person-to-person.

Incubation time:

24 to 36 hours, where based on the small number of known cases of inhalation botulism (3), there is still great uncertainty.

Infectious period:

Botulism is not transmissible from person-to-person.

Prophylaxis:

- Immunity can be achieved by vaccination with botulinum toxoids (fractions of toxins).

Therapy:

- Supportive, i.e. stabilisation of fluid and electrolyte balance, as well as blood pressure and provision of oxygen;
- Administration of polyvalent antitoxin.

Contact:

- Botulism is not transmissible from person-to-person.

Botulism as a biological weapon:

- Above all, one form of botulism – the inhalation of the toxin – is relevant in this context. It is recognisable by the emergence of a large number of cases, with a common time and location of exposure, and the simultaneous lack of commonality in, for example, food intake.

There are no known cases of botulism arising from water intoxication, even though it has been speculated that water supplies could be contaminated. At least two reasons make such a scenario difficult: botulinum toxins are destroyed by current water treatment methods (chlorine, ozone, etc.); and since water turnover in large reservoirs is slow, a relatively large quantity of toxin would be necessary, making it very difficult to accomplish.