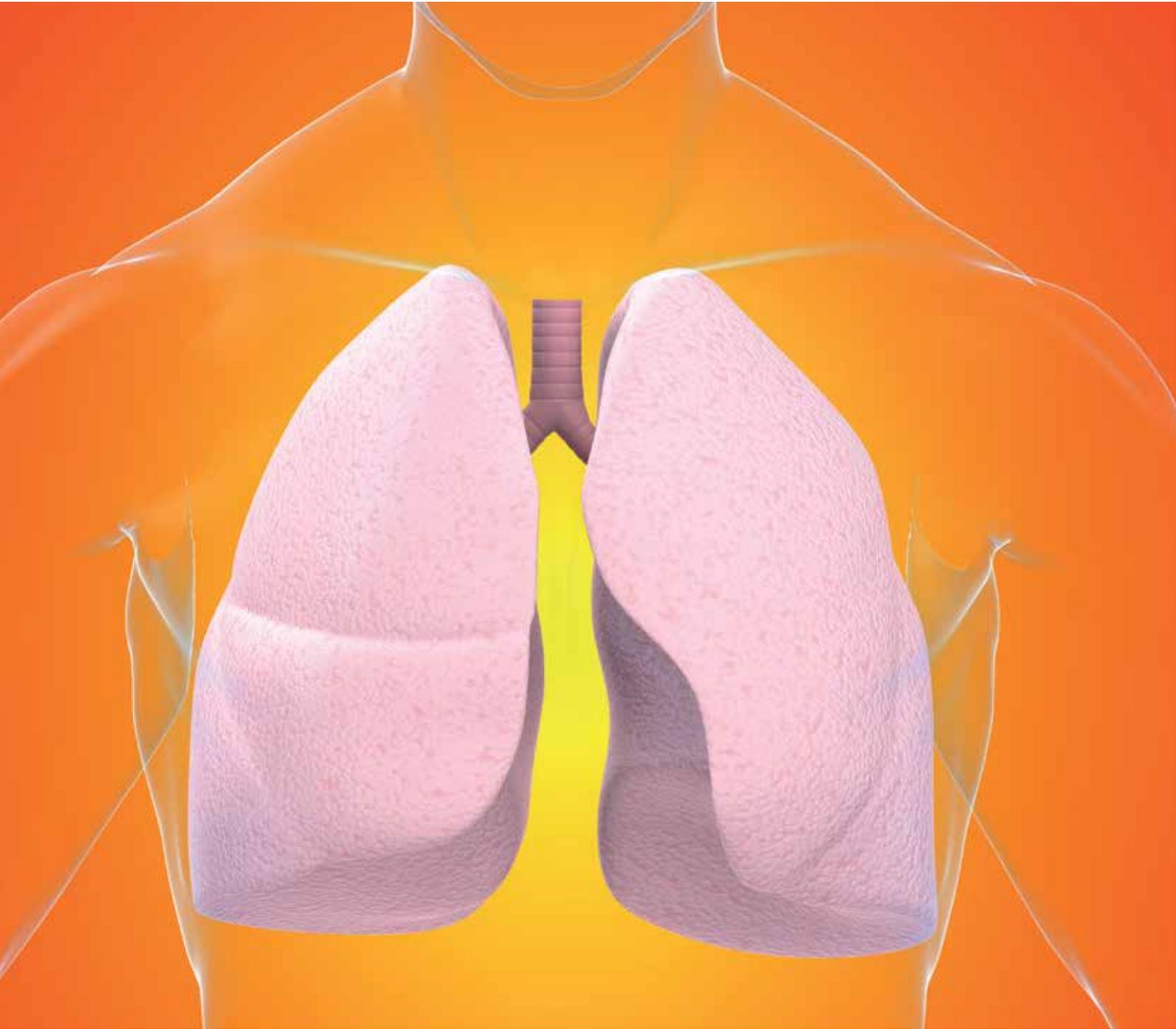


# SSI® BORDETELLA PERTUSSIS TOXIN



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# Bordetella pertussis toxin (PT)

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## Application

Highly purified pertussis toxin intended for use in IgG ELISA.

## Background

Pertussis (whooping cough) is an infectious respiratory disease caused by the bacterium *Bordetella pertussis*, an exclusively human pathogen.

Classical whooping cough is most common in children and is characterized by a paroxysmal cough followed by whooping or vomiting.

Clinical severity varies widely, but the most severe complications, such as apnea, encephalopathy, and pneumonia, is most common in the age group less than one year. Therefore, vaccination programs focus on an early start of vaccination (< 6 months).

The immunity after vaccination lasts for 4-12 years, and it has been observed internationally that pertussis is increasing in adults and older children. Furthermore, the clinical symptoms for this age group are often mild, and the clinical picture can be characterized by prolonged cough which often lasts for up to three months.

## Description

A vial of PT contains 100 µL of 200-300 µg/mL in its active form for IgG PT ELISA. The number of tests per vial depends on the amount of toxin used in the different ELISA protocols.

SSI Diagnostica produces the PT antigen for use as a vaccine component against pertussis and is therefore highly purified.

## Intended Use

The PT can be used as antigen in an ELISA for detection of anti-IgG antibodies against PT. The principle is based on immobilization of PT followed by incubation with patient serum and subsequent detection of human IgG bound to the toxin.

## Role of PT Serology in the Diagnosis of *Bordetella pertussis*

Definitive diagnosis of pertussis has traditionally been made by culture of the causative organism on Bordet-Gengou medium. However, this approach may be insensitive and slow (up to 1 week). PCR demonstrated a significant improvement in diagnostic yield and speed over culture. Especially in infants and in early cases real-time PCR will provide rapid definitive diagnosis, and it is the most wide-spread method in these cases today.

Serology has proved especially useful for later diagnosis of prolonged cough in older children and adults. PT is specific for *Bordetella pertussis* and only IgG antibodies are clinical useful.

Older children and adults can have a milder clinical picture and will often attend medical advice late in the course of the illness. Since diagnosis by means of culture and PCR are only useful in the very beginning of the illness, cases among older children and adults are frequently missed by these two methods. However, in such cases serology is known to be very useful.

Serological analysis used as a supplement to PCR clearly increases the amount of diagnosed cases. Furthermore, there has been made a few comparisons between the value of PCR and serology (IgG to PT), and serology based on a single measurement was better than PCR in a range of cases, partly due to the timing of sampling.

## Clinical Usefulness of Anti-PT IgG ELISA

The IgG ELISA using PT can be used in patients experiencing pertussis-like symptoms for more than two weeks. In general, serology is not recommended for very young children as remaining antibodies from pertussis vaccines can interfere with the results. A positive result would lead to the following treatment and precautions:

- Treatment (macrolides)
- Isolation
- Prophylaxis in persons in contact with newborns, health workers and pregnant females in last trimester.
- Other diagnostic investigation may not be necessary.

## Limitations

- The ELISA using SSI PT is not intended for monitoring vaccine responses.
- Diagnosis of recently pertussis-vaccinated individuals (< 2 years prior) is not possible
- Detection of antibody-response to *Bordetella parapertussis* is not possible.

## Available Product

Article no. 83151 Pertussis toxin.

## Reference

[Dalby et al. Diagnostic Microbiol Infect Dis 63: 354–360, 2009].

## Information and Ordering

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