

# Bluetongue Disease

## Susceptible species

Bluetongue Disease (BT) is a viral, mainly acute disease of sheep and cattle. Goats, New World camelids and wild ruminants are also susceptible to BT. The causative agent of Bluetongue Disease is not dangerous for humans.

## Distribution area

BT was first detected in South Africa and has been known there for a long time. Meanwhile the disease occurs worldwide. In Central Europe, the disease was first detected in 2006 in the Netherlands. In 2007 and 2008, a continuous spread of BT serotype 8 was observed in Germany. In addition, at the end of 2008 a small number of serotype 6 outbreaks were also diagnosed in Lower Saxony. Since the end of 2018, BTV-8 re-emerged in Germany. For substantial parts of South-Germany BTV-8 restriction areas were defined.

## Causative agent

The causative agent of Bluetongue Disease is an *Orbivirus* within the family *Reoviridae*. Twenty-four classical BTV serotypes and an increasing number of atypical BTV serotypes (BTV25 and at least seven further serotypes) can be defined. The atypical BTV strains were only identified in small ruminants (mainly goats).

## Transmission

The disease is transmitted by biting midges of the genus *Culicoides*. Therefore, BT occurs at an increased rate

during the warm season with mild and humid weather. Biting midges mainly attack animals in the open country at dusk and dawn. For the atypical BTV infections also a vector independent transmission will be discussed.

## Clinical picture

Usually, typical clinical symptoms only occur in sheep. Approximately 7-8 days after infection they show first signs of acute disease: increased body temperature, apathy and separation from the herd. Soon after the increase of body temperature swelling of the reddened oral mucous membranes will occur. Increased salivation and frothing at the mouth will be observed. The tongue swells up and may stick out of the mouth. Discoloration of the tongue leading to the name of this disease is very rare and only to be expected in highly susceptible sheep breeds.

The coronal border of the hoof wall reddens and hurts. Sheep may develop lameness; in pregnant animals the disease may cause abortion.

The clinical symptoms in cattle are teat skin inflammation as well as inflammation of the mucous membranes of eye lids, oral cavity and genitals. Furthermore, ablation of mucous membranes of the tongue and mouth as well as blisters of the coronal border of the hoof wall may occur. The clinical picture thus resembles the symptoms of foot and mouth disease.

Virus genome can be detected by molecular diagnostic methods for up to 200 days; infectious virus in contrast is

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only detectable for a maximum of 60 days. The animals develop reliable immunity and may recover completely. The symptoms and pathogenesis of the atypical BTV serotypes are substantially different from the classical BTV strains. No or only very mild symptoms can be detected in goats and sheep after infection with atypical BTV. In addition, the pathogenesis in the affected animals looks different (late viremia, limited humoral response, long-lasting genome detection in the blood for years).

### Diagnostics

As BTV is associated with red blood cells, whole blood should be used for laboratory investigation. Direct pathogen detection and indirect antibody detection are possible.

For more detailed information please refer to the [“Amtliche Methodensammlung”](#) (in German language only).

### Similar clinical pictures

A typical clinical picture usually is only seen in sheep. However, as in other susceptible animal species, no reliable diagnosis is possible based on the clinical picture. Very similar symptoms are also caused by other viral infectious agents such as Foot and Mouth Disease virus, Akabane virus or Border Disease virus.

### Control

BT based on classical serotypes is notifiable in all EU member states. Vaccination of ruminants currently is the only possibility to provide effective protection from clinical disease and virus spread. Use of these inactivated vaccines leads to stable immunity within the ruminant population.

The atypical BTV serotypes will not be controlled in the EU.