

## Experimental BTV-8 infection of Swiss sheep: Special emphasis on clinicopathological picture, virological and diagnostical features and the transplacental transmission of the virus

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### Key words

Bluetongue (BT) virus serotype 8 (BTV-8), Swiss sheep breed, clinic, pathology, transplacental infection

### Aim of the study

Investigation of clinical signs, viremia, pathological lesions and transplacental transmission in Swiss sheep breeds after infection with BTV-8. Validation of serological and virological tests with material from animal experiment. An additional aim was to produce schooling material about BT in sheep.

### Material and methods

Common Swiss sheep breeds (6 Swiss Black-brown Mountain, 6 Brown-headed Meat, 6 Swiss White Alpine, 6 Valais Black Nose) and 6 Poll Dorset sheep were inoculated with cattle blood containing European BTV-8. Clinical signs were assessed using a score system. Blood samples were collected until the end of the short-term trial at 16 d.p.i. Three sheep used in a long-term study, were sampled thereafter weekly until necropsy at 151 d.p.i.. At necropsy pathological score was used to quantify the severity of alterations and histology was performed. Samples were analyzed for BTV using qRT-PCR or were tested for antibody using commercial BT-ELISA and VNT. Fetuses of pregnant animals and a new born lamb were investigated for BTV and antibodies.

### Results and significance

Swiss sheep breeds were susceptible to BTV-8 infection. They developed moderate, BT-characteristic symptoms, similar to those observed in Poll Dorset sheep. Regardless of breed, majority of animals showed fever, swelling of the head, erosions of the mouth and subcutaneous haemorrhages. No significant breed-related differences in virulence was found. A clinical score system was established. In necropsy hemorrhages on the base of the arteria pulmonalis was always present. Clinical signs and fever were indicative for the concurrent presence of high amounts of viral RNA in blood. In the long-term study viremia (RNA) was demonstrated up to 133 d.p.i., viral RNA could be detected in tissues up to 151 d.p.i. and in one of two fetuses. A lamb born at term developed normally but had a brachygnathia inferior. That was the first reported evidence that BTV-8 field strains are able to cross the placental barrier in sheep under experimental conditions. Using time course samples different commercial BT-ELISA and virus neutralization test could be compared regarding early antibody detection. Pathologists, clinician and public authorities could follow the experiments.

### Publications, posters and presentations

- Worwa, G. et al. (2008) Blauzungenkrankheit bei Schweizer Schafrassen: Klinische Symptome nach experimenteller Infektion mit dem BTV-Serotyp 8. *Schweiz. Arch. Tierheilk.* 150, 491-498.
- Worwa, G., et al. (2009) Experimental transplacental bluetongue virus serotype 8 infection in sheep. *Vet. Rec.* 164, 499-500.
- Worwa, G., et al. (20xx) Virological and pathological findings in Bluetongue virus serotype 8 infected sheep. *Vet. Microbiol.* (submitted)
- Worwa, G., Chaignat, V., Thür, B. (2008) Comparison of 5 commercially available ELISAs for the detection of bluetongue virus 8 antibodies in sheep. *Bluetongue Satellite Symposium EPIZONE, Brescia, 7.6.08*

**Project 1.07.10**

**Project duration** September 2007 – August 2009