

## MYCOPLASMA CONJUNCTIVAE IS MAINTAINED IN DOMESTIC SHEEP BUT NOT IN ALPINE CHAMOIS IN THE SWISS ALPS

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### Extended abstract

Infectious keratoconjunctivitis (IKC) caused by *Mycoplasma conjunctivae* is a highly contagious ocular infection which is common in domestic sheep and goats. In the European Alps, IKC is often observed in Alpine chamois (*Rupicapra r. rupicapra*) and in Alpine ibex (*Capra i. ibex*), but the disease has also been described in other wild Caprinae in the Pyrenees and in New Zealand. The infection is characterised by inflammation of the conjunctiva and cornea, and in the most advanced stages, the cornea is opaque or even perforated. In IKC outbreaks in chamois and ibex, spontaneous recovery is the most prevalent outcome of the disease. However, mortality can occasionally reach 30% (2). On alpine meadows in Switzerland, IKC occurs at the same time in the same regions in several host species. To assess which host species maintains the *M. conjunctivae* infection in Switzerland, we performed bacteriological and serological investigations in both, domestic sheep and Alpine chamois.

Among a sample of 69 sheep showing clinical signs of IKC in 3 Swiss cantons, *M. conjunctivae* was identified 53 times (76.8%). An indirect ELISA based on a membrane fraction of *M. conjunctivae*, prepared by industrial standards (1) was used to detect *M. conjunctivae* antibodies in 674 sera of adult sheep. We analysed a stratified random sample of 123 sheep herds from 25 out of the 26 Swiss cantons. At least one positive animal was detected in 89.4% of the herds. In positive herds (n=110), 57.1% of the individual animals tested positive. To assess the importance of sheep's age in the spread of *M. conjunctivae*, 209 sera of adult sheep and 93 lamb sera among 8 sheep herds were analysed using the indirect ELISA. Seroprevalence in 2-6 month old lambs was 50.5%, indicating that the IKC agent is spread in sheep flocks during raising. Lambs experimentally infected with *M. conjunctivae* carried the agent for 8 and 23 weeks, respectively, depending on the strain used for challenge. We concluded that *M. conjunctivae* is widespread in domestic sheep in Switzerland. In this country, mycoplasmal IKC was found to be endemic and self-maintained in the domestic sheep population (4). In alpine chamois, the occurrence of IKC was assessed in 1950-1999 in Grisons, a canton in eastern Switzerland. First IKC outbreaks were reported in the decade 1950-1959. Since then, the number of affected subpopulations constantly increased

and, by the year 1999, IKC outbreaks were reported in 39 out of 51 (77%) chamois subpopulations. In 1992-1999, a total of 243 chamois which died of the consequences of IKC were recorded. The number of cases differed between years, and a distinct seasonal trend was observed. IKC was more common during summer and autumn, with 48% of the cases recorded in August-October. Juveniles (< 4 years of age) were mostly represented. To verify the presence of *Mycoplasma conjunctivae* in chamois we have analysed conjunctival swabs taken from animals affected with IKC. Among a sample of 28 affected chamois, *M. conjunctivae* was identified 14 times (50%). An indirect ELISA was developed to detect specific *M. conjunctivae* antibodies in the sera of alpine chamois with infectious keratoconjunctivitis using serospecific antigens of *M. conjunctivae*. In subpopulations with ongoing IKC outbreaks, seroprevalence was low (8%). Seroprevalence was even lower in subpopulations with recent IKC outbreaks (3%). We concluded that the *M. conjunctivae* infection is not maintained in the chamois population of the eastern Swiss Alps (3), and transmission of the agent from sheep living in proximity during summer may be the source of epidemics in chamois.

Prevention of IKC in wild Caprinae should focus on preventing the spill-over of *M. conjunctivae* from livestock. However, studies are required to evaluate the distribution of *M. conjunctivae* infection in domestic sheep in several countries, and molecular markers should be developed to trace spill-over of *M. conjunctivae* from domestic animals to wildlife populations. In addition, immunological studies should be performed to develop tools which could lead to the control of *M. conjunctivae* infection in domestic sheep.

## Zusammenfassung(??)

## Résumé (??)

## References

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