IS*711*-based real-time PCR assay as a tool for detection of *Brucella* spp. in wild boars and comparison with bacterial isolation and serology

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Problemstellung und Zielsetzung
In the present study, we describe the establishment and evaluation of the recently established real-time PCR assay based on the *Brucella*-specific insertion sequence IS*711* with blood and tissue samples from wild boars collected in Switzerland. Results from IS*711* real-time PCR were compared to those obtained by bacterial isolation, Rose Bengal Test (RBT), competitive ELISA (c-ELISA) and indirect ELISA (i-ELISA).

Material und Methoden
The clinical material to be tested in this study originated from a population of wild boars in Switzerland that represents a natural reservoir of *Brucella suis* biovar 2. The first group of samples consisted of various organs from 53 animals: spleen, testicles, accessory sexual glands, uteri in different stages of gravidity as well as non-gravid uteri samples, lung, and in individual cases penis with prepuce, placenta, kidney, and bladder containing urine. The second group of clinical samples consisted of blood samples. A total of 199 blood samples were examined. The samples were collected during the hunting seasons of 2001/2002 and 2002/2003 under the wild boar surveillance program in Switzerland.

Ergebnisse und Bedeutung
The IS*711* real-time PCR assay has been shown to be specific for *Brucella* spp. with a detection limit of 10 copies, indicating high assay sensitivity. IS*711* real-time PCR detected infection in 11.2% (16/143) of wild boars that were serologically negative. Serological tests showed different sensitivities [RBT 15.6% (31/199), c-ELISA 7.5% (15/199) and i-ELISA 5.5% (11/199)] and only 3% (6/199) of blood samples were positive with all three tests, which makes interpretation of the serological results very difficult. Regarding examination of tissue samples, the IS*711* real-time PCR detected infection in 26% (14/53) of animals, while *Brucella* spp. could be isolated from tissues of only 9.4% (5/53) of the animals. The results presented here indicate that IS*711* real-time PCR assay is a promising way to accurately detect *Brucella* spp. infections in wild boars. For this reason, we propose the employment of IS*711* real-time PCR as a complementary tool in brucellosis screening programs and for confirmation of diagnosis in doubtful cases.

Publikationen, Poster und Präsentationen
Hinić V. (2007) Real-time PCR assay for the detection of *Brucella* spp. in naturally infected wild boars. Dissertation, Veterinärmedizinische Fakultät, Universität Bern.

Hinić V. et al (2008) Novel identification and differentiation of Brucella melitensis, B. abortus, B. suis, B. ovis, B. canis, and B. neotomae suitable for both conventional and real-time PCR systems. Journal of Microbiological Methods. 2008 75:2, 375-8.

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