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Evaluation of five SRLV ELISAs for fitness for purpose in sheep and goat accreditation schemes in the Netherlands

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ABSTRACT

Maedi-visna (MV) in sheep and caprine arthritis encephalitis (CAE) in goats are progressive inflammatory diseases caused by MV virus (MVV) and CAE virus (CAEV), retroviruses that belong to the group of small ruminant lentiviruses (SRLV). In the Netherlands, SRLV accreditation based on screening of goat and sheep sera for specific SRLV antibodies, followed by confirmatory testing of positive samples by a second antibody test, will reach its 40th birthday in 2022. The aim of this study was to evaluate the strategy used within the Dutch SRLV accreditation scheme, based on test characteristics of five different commercially available ELISAs and an AGIDT. The specificity of the ELISAs was determined using Icelandic sheep sera and sera from Dutch SRLV accredited sheep flocks and goat herds. When inconclusive test results are considered negative, specificity did not differ between ELISAs. In the absence of a gold standard test for SRLV infection, goats and sheep from infected herds and flocks, and sheep with clinical maedi-visna were considered positive if three or more out of five ELISAs tested positive. Significant differences in sensitivity were observed between ELISAs, which were most apparent for sheep samples. Based on specificity, sensitivity and the possibility for sample pooling, the ELISA that was already in place as a screening test was still considered to be the most suitable ELISA for accreditation purposes. Another ELISA with very good test characteristics has been selected to replace the AGIDT as a confirmatory test for the test scheme. Two of the ELISAs were considered to be less suitable. To conclude, we here present a SRLV accreditation scheme in the Netherlands that has been updated according to fitness for purpose of commercially available SRLV antibody tests.