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Equine Viral Arteritis and Equine Infectious Anemia diagnosis: outcome of InterLaboratory Proficiency Testing organized from 2009 to 2022 by the European Union Reference Laboratory (EU-RL) for equine diseases

FROGER D. [1], LECOUTURIER F. [1], MADELINE A. [1], ZIENTARA S. [2], VALLE-CASUSO J. [1]

[1] ANSES laboratory for animal health in Normandy, GOUSTRANVILLE, France; [2] ANSES laboratory for animal health, MAISONS ALFORT, France

PHEED unit of ANSES-Laboratory for animal health in Normandy takes part in the reference mandate management of the European Union Reference Laboratory (EU-RL) for equine diseases other than African Horse Sickness. Directorate-General for Health and Food Safety prescribed to the EU-RL to organize InterLaboratory Proficiency Testing (ILPT) for each equine diseases that are in its framework activities. An ILPT aims to assess the ability of participant laboratories to perform the requested test and to provide results in accordance with those expected. Furthermore, an ILPT also aims to guide laboratories with unsatisfactory results in implementing corrective actions and monitor their effectiveness. PhEED unit had in charge ILPT for Equine Viral Arteritis (EVA) and Equine infectious Anemia (EIA) diagnosis. In 2009, 2013, 2016, and 2020 PhEED unit organized IL-PT for EVA serological diagnosis using the Virus Neutralization Test (EVA-VNT-ILPT) and for EVA Virus Isolation (EVA-VI-ILPT) using virus isolation on cell culture and RT-PCR. In 2010, 2014, 2018 and 2022, 4 ILPT were about EIA serological diagnosis using Agar Gel ImmunoDiffusion test (EIA-AGID-ILPT), and in 2018 and in 2022, 2 ILPT for EIA diagnosis using ELISA (EIA-ELISA-ILPT).
The codification of the ILPT samples to be tested was carried out to obtain a unique random numerical code covering all the needed samples. Each ILPT result analysis was processed confidentially and transmitted to all participant laboratories while preserving anonymity.
In 2009, results obtained showed that the specificity and sensitivity of EAV VNT ILPT were 91.7% and 95.9%, respectively. According to the results obtained by all participants in 2020, the percentage increased to 100 % for specificity and 97.7% for sensitivity. Regarding the EVA VI ILPT results obtained in 2020, the specificity and sensitivity reached 97.8% and 90.4%, respectively.
In 2010, the sensitivity results of the network of laboratories participating in ILPT for EIA serological diagnosis using AGID test was 66.3% and in 2022, it reached 96.5%. In addition, in 2018, DG SANTE requested the EU-RL for equine diseases to organize ILPT for EIA using ELISA test. Two ILPT has been scheduled in 2018 and in 2022. The specificity of both EIA ELISA ILPT was excellent. The ILPT sensitivity increased from the 98.4% in 2018 to 99.3% in 2022.
To conclude, the IL-PT organized by the LR-UE have been very useful to harmonize the diagnostic tools to control those diseases and to maintain the technical skills of the laboratories performing EVA and EIA diagnosis, especially for those that have in charge of the mandate of National Reference Laboratory for EVA or EIA in their respective country. According to the results obtained in each ILPT for EVA and EIA organized by the LR-UE, we can conclude that the network of European NRL for EVA and EIA has a very good performance in diagnosing those diseases, and we have. very low risk of giving false negative or false positive results on a horse for EVA and EIA diagnosis, contributing in this way to protect the health of the horses located and traveling in the EU.