EXTERNAL REFERENCES

ID SCREEN® PPR ANTIGEN CAPTURE

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Publications / References:

1) Jemberu W.T. *et al.* (2022). **Economic impact of a peste des petits ruminants outbreak and vaccination cost in northwest Ethiopia**. Transboundary and Emerging Diseases.	• Outbreak investigation using the ID Screen® PPR Antigen Capture. A total of 20 swab samples (nasal, ocular, and oral and/or gum debris) collected from 12 diseased animals in four flocks were assessed for the presence of PPRV antigen. • *Results*: 14 (70%) samples from 8 animals (75%) were positive for PPR viral antigen.			Epidemiological study		
2) Ahmed S. *et al.* (2021). **Isolation and identification of peste des petits ruminants virus from goats in Egyptian governorates**. Veterinary World, 14(4), 926.	• Samples were collected from unvaccinated goats with clinical signs suggestive of PPR. A total of 256 sera were tested for the detection of PPRV antibodies using the ID Screen® PPR Competition, while 214 samples of blood buffy coat preparation, animal swabs (nasal, ocular, and saliva), and fecal and tissue samples were tested for the detection of the PPRV antigen using the ID Screen® PPR Antigen Capture. Molecular diagnosis, gene cloning, blast analysis, and phylogenetic analysis were performed for the molecular characterization of PPRV • *Results*: the seroprevalence results of PPRV antibodies in the tested sera showed a total of 67.9% positive samples. The rates of PPR antigen recorded by the ID Screen® PPR Antigen Capture ELISA in the swabs (nasal and ocular) and tissue samples were 44.3%, 46.8%, and 43.5%, respectively, with saliva swabs having the highest rate of PPRV positivity (76.4%) and fecal sample having the lowest (33.3%). The circulating PPRV strain belongs to the IV lineage.	Correlation with other techniques		Epidemiological study		

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3) Haroun M. *et al*. (2021). **Peste Des Petits Ruminants: A First Retrospective Investigation Among Susceptible Animal Species in Qatar**. DOI: https://doi.org/10.21203/rs.3.rs-371540/v1.	• Retrospective investigation using three hundred sixty-eight whole blood, blood sera, ocular and nasal swabs, and organ tissues, sampled from sheep, goats, and wild ruminants (**deer, gazelle, addax, oryx, blackbuck, springbuck, and waterbuck**). Samples were tested using the ID Screen® PPR Competition (on sera), the ID Screen® PPR Antigen Capture (on swabs and organ tissues), and PCR (on sera and swab eluates. • *Results*: detection of anti-PPRV antibodies in serum samples: 56% (n=14). Detection of PPR viral Ag: 100% (n=12).52% (n=71) of the animals were considered infected with the field PPRV strains, 54% (n=17) were sheep, 47% (n=17) were goats and 54% (n=37) were wild ruminants. 7 wild ruminant animal species (deer, gazelle, addax, oryx, blackbuck, springbuck, and waterbuck) were considered positive for PPR infection.	Correlation with other techniques	Particular species	Epidemiological study		
4) Saeed F. A. *et al.* (2021). **Epidemiology and molecular characterization of re-emerged virulent strains of Peste des Petits Ruminants virus among sheep in Kassala State, Eastern Sudan**. Irish Veterinary Journal, 74(1), 1-9.	• 12 suspected PPR outbreaks among sheep and goats were investigated using the ID Screen® PPR Antigen Capture and RT-PCR. • *Results: Of* 30 samples, 22 (73.3%) were positive using the ID Screen® PPR Antigen Capture. From 22 ELISA-positive samples, 17 (77.3%) were positive by N gene-based RT-PCR.	Correlation with other techniques		Epidemiological study		
5) Halecker S. *et al*. (2020). **Comparative evaluation of different antigen detection methods for the detection of peste des petits ruminants virus**. Transboundary and Emerging Diseases, 67(6), 2881-2891.	• 2 newly emerged PPR virus (PPRV) isolates were tested in an animal trial to analyze their pathogenesis, and to evaluate serological and molecular detection methods. Ocular and nasal swabs and fecal samples were used to evaluate the ID Screen® PPR Antigen Capture, ID Rapid® PPR Antigen, another Lateral Flow Device, and nucleic acid detection. • *Results*: for all rapid antigen detection methods, including the ID Screen® PPR Antigen Capture, a high specificity of 100% was observed independent of the sample matrix and dilution buffers used. Both the ID Screen® PPR Antigen Capture and LFD tests showed the highest sensitivities for nasal swabs. The detection rate of the ID Screen® PPR Antigen Capture and the LFD tests was 78%, 75%, and 78%, respectively. Ocular swabs were less suitable for antigen detection of PPRV. These results reflect the increased viral load in nasal swabs of PPRV-infected goats compared to ocular swabs. The fecal samples were the least suitable for antigen detection. Nevertheless, based on the excellent diagnostic specificity of the rapid tests, positive results generated with other sample matrices are solid. **Nasal swab samples are the first choice for the antigen detection of PPRV.**	Correlation with other techniques	Particularmatrices	Experimental study	Performance evaluation	

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	The use of PBS for sample collection and dilution instead of the kit-specific dilution buffer is not recommended because of the loss of sensitivity in the analyses. ***The ID Screen® PPR Antigen Capture provides the best results in terms of sensitivity and produces unambiguous results* (sic).**					
6) Manzoor S. *et al*. (2020). **Genetic characterization of peste des petits ruminants virus (Pakistani isolates) and comparative appraisal of diagnostic assays**. Transboundary and Emerging Diseases, 67(5), 2126-2132.	• **FAO PPR Project:** efficacy of 3 tests for the detection of PPRV (the ID Screen®PPR Antigen Capture, a commercial Lateral Flow Device-peste test, and RT-PCR) was compared using 110 swab samples from 60 selected outbreaks. • *Results*: LFD gave fewer positive samples (47.2%) as compared to the ID Screen® PPR Antigen Capture and PCR, 62.7% and 67.3%, respectively. The kappa value for the ID Screen® PPR Antigen Capture was 0.67 which indicates good agreement between the ID Screen® PPR Antigen Capture and RT-PCR, and the kappa value for the commercial LFD was 0.33, indicating a fair agreement between LFD and RT-PCR. Sensitivity was calculated as 85% and 57%, and specificity was calculated as 83% and 79% for the ID Screen® PPR Antigen Capture and the commercial LFD, respectively. ***We will recommend the ID Screen®PPR Antigen Capture as it has more sensitivity and specificity than peste test which is 85% and 83%, respectively. Also, according to Kappa, the ID Screen®PPR Antigen Capture has good agreement with RT-PCR which is gold standard for PPRV diagnosis (sic).***	**Correlation with other techniques**		**Epidemiologicalstudy**		**Performance evaluation**
7) Asil R. M. *et al.* (2019). **First detection and genetic characterization of peste des petits ruminants virus from dorcas gazelles "Gazella dorcas" in the Sudan, 2016-2017**. Archives of virology, 164(10), 2537-2543.	• Free-ranging with suspected signs of PPR and healthy semi-captive **dorcas gazelles (*Gazella dorcas*)** were tested using the ID Screen®PPR Antigen Capture and RT-PCR. • *Results*: PPRV was detected in all specimens with clinical signs using the ID Screen®PPR Antigen Capture. RT-PCR confirmed the presence of PPRV. PPRV was also detected in four healthy semi-captive dorcas gazelles using the ID Screen®PPR Antigen Capture; RT-PCR confirmed the presence of PPRV in 3 of the positive animals.	**Correlation with other techniques**	**Test of particular species**	**Epidemiologicalstudy**		
8) Bataille A. *et al.* (2019). **Optimization and evaluation of a non-invasive tool for PPR surveillance and control**. Scientific Reports 9: 4742.	• Optimization of PPRAG diagnostic tools adapted to fecal samples (from field and experimental infection). • *Results*: the ID SCREEN® PPR ANTIGEN CAPTURE can detect PPRV in fecal samples; increased incubation time on fecal samples allows to increase the sensitivity without impacting the specificity; additional specificity data from captive artiodactyls (30 samples, 7 species): 100%. **the ID SCREEN® PPR ANTIGEN CAPTURE can be used on fecal matrix and obtained data could be exploited for non-invasive PPR detection (especially for wildlife).**	**Correlation with other techniques**	**Test of particular species**		**Experimental infection**	**Performance evaluation**

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9) Halecker S. *et al.* (2019). **Studies on the evaluation of a molecular PEN-SIDE TEST for PPRV.** 13th EPIZONE Annual Meeting, 26-28 August 2019, Berlin, Germany.	• A comparative evaluation of rapid tests for PPRV: ID Rapid®PPR Antigen, ID Screen®PPR Antigen Capture, Rapid Field Test for PPRV (Pirbright FLD), and a molecular pen-side test for PPRV (FLI). • *Results*: sensitivity ID Screen®PPR Antigen Capture=75% whereas sensitivity Pirbright LFD=53,3%; ID Rapid®PPR Antigen: performance equivalent to ID Screen®PPR Antigen Capture. **The ID Screen®PPR Antigen Capture and the ID Rapid®PPR Antigen are better tools to detect PPRV than Pirbright LFD.**	Correlation with other techniques				Performance evaluation
10) Donduashvili M. *et al.* (2018). **Identification of Peste des Petits Ruminants Virus, Georgia, 2016.** Emerging Infectious Diseases, 24(8):1576-1578.	• Nasal swabs and ocular samples from sheep showing symptoms of PPRV infection were tested with the ID Screen®PPR Antigen Capture; six positives were further tested to construct a phylogenetic tree. • *Results*: PPRV infection in Georgia does not seem to come from Turkey, as expected. **The ID SCREEN® PPR ANTIGEN CAPTURE is used to identify positive samples before extracting and testing PPRV.**			Epidemiological study		
11) Bodisaikhan K. (2017) **PESTE DES PETITS RUMINANTS (PPR) IN SAIGA ANTELOPE IN MONGOLIA.** OIE communication Bali, Indonesia. 2017.07.04-06.	• During the PPRV outbreak in Saiga antelopes, in Mongolia at the end of 2016, the ID Screen® PPR Competition and the ID SCREEN® PPR ANTIGEN CAPTURE were used to diagnose PPR. • *Results*: the ID Screen® PPR Competition and the ID SCREEN® PPR ANTIGEN CAPTURE detected for the first time PPR antibodies and PPR antigen in Saiga antelopes.	Correlation with other techniques	Test of particular species	Epidemiological study		
12) Mahmoud, A.Z.E. *et al.* (2017) **Outbreaks of PPR-FMD among sheep and goats in Hail, Saudi Arabia.** Veterinary Sciences: Research and Reviews, 3(2): 38-44.	• Clinical and serological studies during PPR outbreak among small ruminants; PPR was evaluated with the ID Screen® PPR Competition and the ID SCREEN® PPR ANTIGEN CAPTURE among **sheep, goats, and camels**. • *Results*: PPRV-Ag and anti-PPRV nucleoprotein antibodies were found in sheep and goats, but not in camels.		Test of particular species	Epidemiological study		
13) Karim A. *et al.* (2016). **Detection of Peste des petits ruminants virus and goatpox virus from an outbreak in goats with high mortality in Meghalaya state, India.** Veterinary World, 9(9): 1025-1027.	• Reporting of an occurrence of mixed infection of PPR (using the ID Screen® PPR Competition, the ID SCREEN® PPR ANTIGEN CAPTURE and PCR) and goat pox (using PCR) from an outbreak in goats with high mortality detected for the first time. • *Results*: 7/44 animals survived; all were positive with the ID Screen® PPR Competition and the ID SCREEN® PPR ANTIGEN CAPTURE; 4/7 were positive with RT-PCR. **The ID Screen® PPR Competition and the ID SCREEN® PPR ANTIGEN CAPTURE, are tools for effective PPR disease surveillance and monitoring.**	Correlation with other techniques		Epidemiological study		

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14) Zakian A. *et al*. (2016) **The first report of peste des petits ruminants (PPR) in camels (Camelus dromedarius) in Iran.** Trop Anim Health Prod.1007/s11250-016-1078-6.	• The ID SCREEN® PPR ANTIGEN CAPTURE was used in **camels** for the detection of PPR viral antigen and also to differentiate between rinderpest and PPR viruses. • *Results*: confirmation of PPRV in camels. **The ID SCREEN® PPR ANTIGEN CAPTURE detects PPRV in camels, showing a good correlation with PCR.**	Correlation with other techniques	Test of particular species			
15) Rojas J. M. *et al*. (2014) **Vaccination with Recombinant Adenoviruses Expressing the Pest des Petits Ruminants Virus F or H Proteins Overcomes Viral Immunosuppression and Induces Protective Immunity against PPRV Challenge in Sheep**. Plos One, Vol. 9, Issue 7, e101226.	• Vaccination and challenge experiments with recombinant adenoviruses expressing PPR proteins; the ID SCREEN® PPR ANTIGEN CAPTURE was used to assess the presence of PPRV in ocular, nasal, and oral swabs after challenge. • *Results*: all swabs collected before the challenge were negative to PPRV. Non-vaccinated and infected animals are detected between 5 and 7 days with nasal swabs. **The ID SCREEN® PPR ANTIGEN CAPTURE is a tool for following the validity of vaccination.**				Experimental infection	
16) Comtet L. *et al*. (2013). **Validation of the ID Screen® Peste des Petits Ruminants Antigen Capture ELISA.** Poster presented at the 7th Epizone Annual Meeting 2013. Brussels, Belgium.	• Validation data of the ID SCREEN® PPR ANTIGEN CAPTURE compared to a previously commercially available test. • *Results*: the ID Screen® PPR ANTIGEN CAPTURE allows the detection of PPRV in live animals or for post-mortem diagnosis; it may be used in a wide variety of matrices. **The ID SCREEN® PPR ANTIGEN CAPTURE demonstrates improved sensitivity and shows excellent correlation with RT-PCR and RT-qPCR.**	Correlation with other techniques				Performances evaluation

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