Prevalence of Hepatitis-Associated Viruses in Austrian Equids

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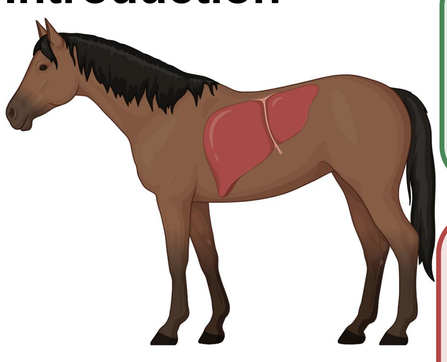
Introduction



equine hepatitis - associated viruses

Equine Parvovirus Hepatitis (EqPV-H)
- *Parvoviridae*
- Single stranded DNA
- Subclinical to mild hepatitis

Equid Hepatitis B virus (EqHBV)
- *Hepadnaviridae*, double stranded DNA
- Chronic hepatitis in donkeys & zebras
- In vitro infection of equine hepatocytes

Equine Hepacivirus (EqHV)
- *Flaviviridae*
- Single stranded RNA
- Subclinical to mild hepatitis
- Chronic hepatitis

Hepatitis E Virus (HEV)
- *Hepeviridae*, single stranded RNA
- Acute to chronic hepatitis in humans
- No confirmed association with equine hepatitis

Research Objectives
- **Comprehensive understanding of the prevalence of hepatitis-associated viruses in the Austrian equid population**
- **Investigation of regional differences and potential risk factors for infection**

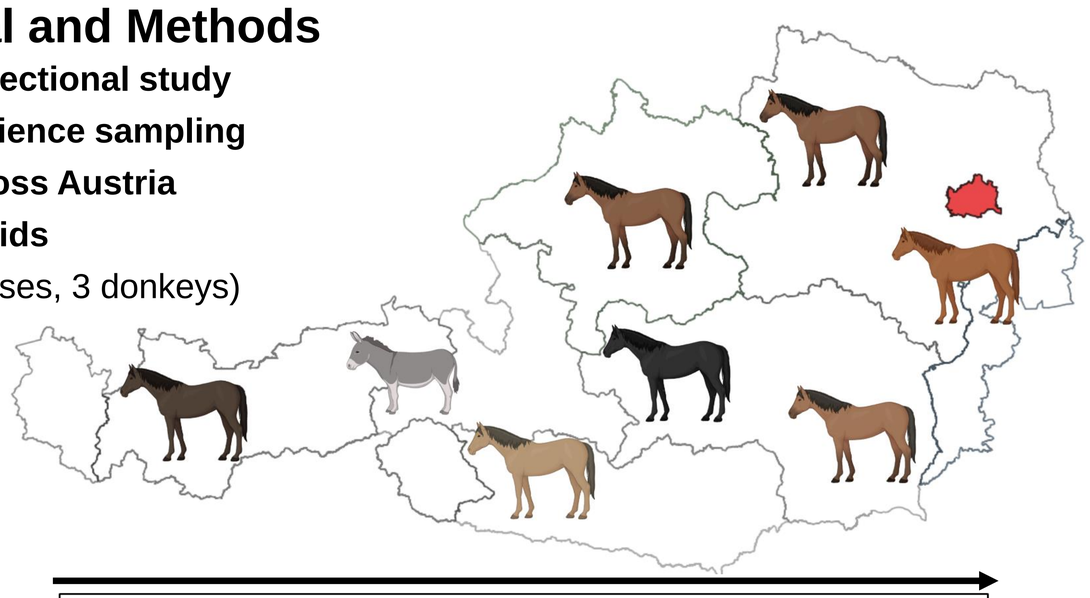
Material and Methods

Cross-sectional study

Convenience sampling across Austria

586 equids

(583 horses, 3 donkeys)



May 2023 — **September 2024**

Serum samples (n = 586)

(RT-) qPCR
- EqPV-H DNA
- EqHV RNA
- EqHBV DNA

Luciferase immunoprecipitation
- EqPV-H Antibodies
- EqHV Antibodies

Faecal samples (n = 529)

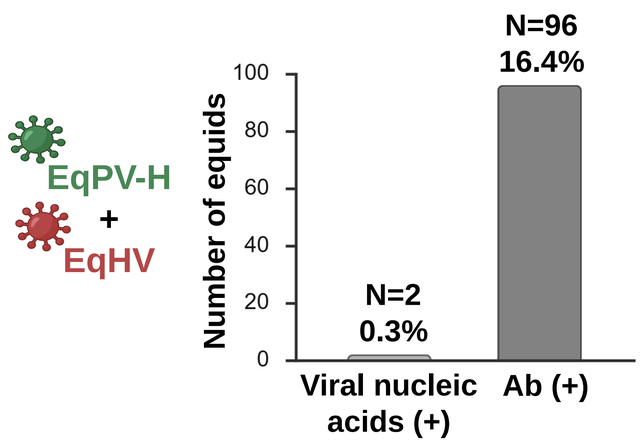
RT-qPCR
- HEV RNA

Data collection:
- **Standardized questionnaire**
- **Clinical examination**

Statistical Analysis:
- **Generalized estimating equation (GEE)**

Results

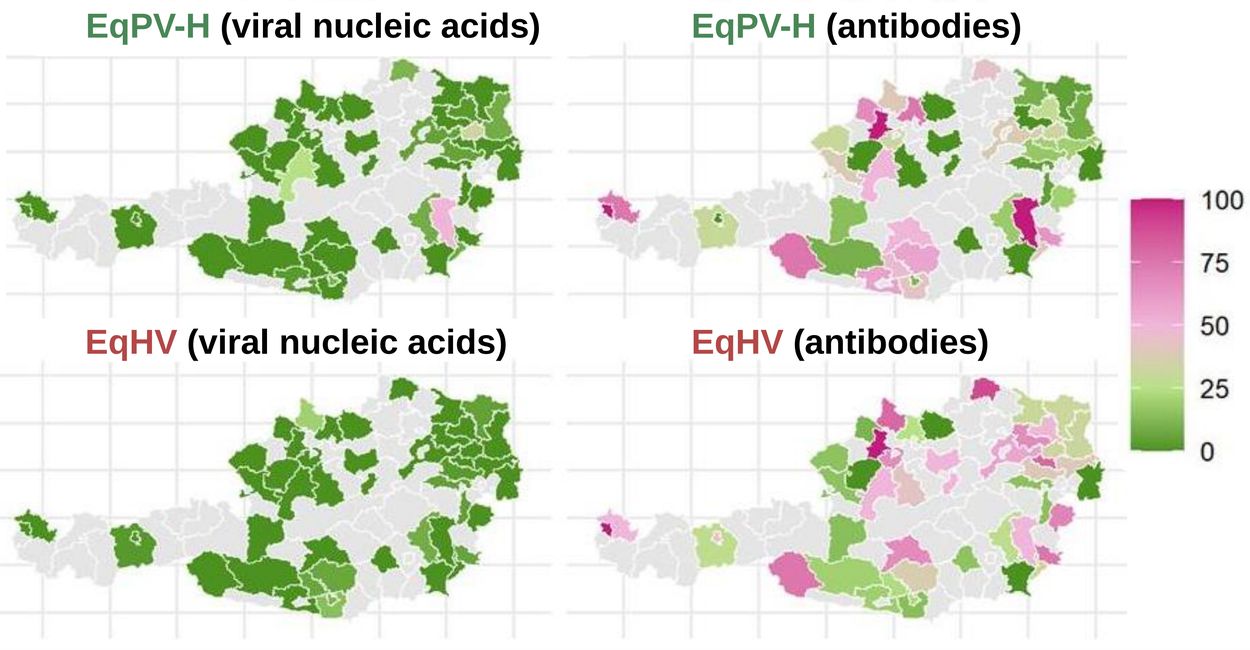
Co-infection & Co-seropositivity



Virus	Viral nucleic acids positive N	Viral nucleic acids positive Prevalence %	Antibody positive N	Antibody positive Seroprevalence %
EqPV-H	15	2.6 95%CI: 1.4-4.0	184	31.4 95%CI: 27.7- 35.3
EqHV	14	2.4 95%CI: 1.3-4.0%	217	36.9 95%CI: 33.0- 41.0
EqHBV	0	All negative		-
HEV	0	All negative		-

Viral nucleic acids & antibody positive
N = 14/586, 2.4 %
N = 7/586, 1.2 %

Regional prevalences (%) across Austria



Risk factors for seropositivity

		Odds Ratio (95% CI)	p-value
EqPV-H	Altitudes between 150 and 550 meters of elevation	**6.07** (1.54-23.93)	0.001
	Altitudes above 550 meters of elevation	**10.74** (2.78-41.53)	0.0006
	Activity of trail riding	**0.62** (0.40-0.97)	0.034
	Presence of EqHV antibodies	**2.52** (1.70-3.72)	<0.0001
EqHV	Regional differences	**0.21** (0.06-0.78)	0.020
	Season spring	**3.51** (1.6-7.68)	0.002
	Season winter	**3.2** (1.09-9.41)	0.034
	Presence of EqPV-H antibodies	**2.93** (1.87-4.60)	<0.0001

Significance: p<0.05

Conclusion

- **Confirmation of the presence of EqPV-H and EqHV in the Austrian equid population, with moderate seroprevalence and low viral prevalence**
- **No evidence of infection with EqHBV and HEV**
- **Regional differences**
- **Influence of season and altitude on antibody status**
- **Persistent infection with EqPV-H (presence of viral nucleic acids & antibodies)**

Contact:

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