

Epidemiologic study of pestivirus infection in both wild and domestic ruminants

A survey in the Ubaye Valley (Alpine mountains, France)

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Background

Since several years, *Pestivirus* infections have been widely documented among wild ruminants^{1,2}. Earlier epidemiologic studies often incriminated interspecies transmission between wild and domestic ruminants. In order to assess this statement, this study was carried out to investigate the apparent prevalence of pestivirus infection in both wild and domestic ruminants in the Ubaye valley.

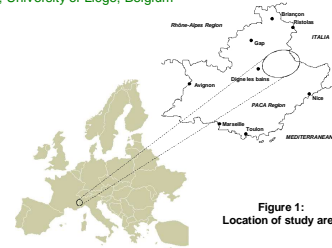


Figure 1: Location of study area

Material and Methods

❖ **Geographic areas:** inside the Ubaye Valley (figure 1), sampling of animals was done in five areas identified for their high contact rates between wild and domestic ungulates.

❖ **Samples, laboratories analysis:**

Wild ruminants

Domestic ruminants

Sampling	Wild ruminants	Domestic ruminants
	Blood and spleens were collected by volunteers wild game societies and by the Forest National Office	For serum: 1 out of 10 among sera collected for national prophylaxis of brucellosis For virologic study : samples based on local veterinarian clinical suspicion (swabs and spleens)

Virological analysis RT-PCR directed on the 5'UTR sequence (on RNA extracted from spleens or swabs) followed by sequencing

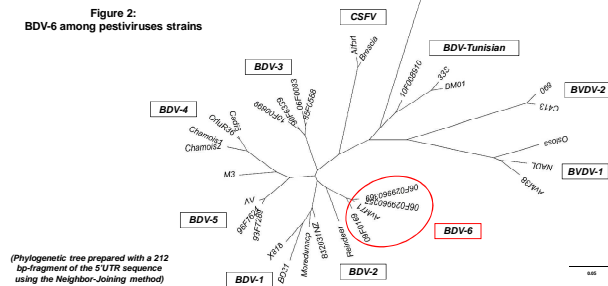
Serological analysis Symbiotics SERELISA (on animal sera)

❖ **Statistical analysis:** Welch test was used to compare distributions of ELISA optical densities obtained between the different species.

Virological results

➢ Wild ungulates : no pestivirus was found in 77 samples tested.

➢ Domestic flocks : a strain was isolated and was clustered within the BDV-6 group³ (figure 2).



Serological results

➢ Apparent seroprevalence was calculated:

- 28.9% (CI95%: [19.1-40.5%]) for chamois

- 25.9% (CI95%: [11.1-46.3%]) for roe deer

- 9.1% (CI95%: [0.2-41.3%]) for mouflons

and

- 76.5% (CI95%: [74.2-79.4%]) for sheep

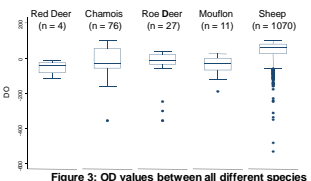


Figure 3: OD values between all different species

➢ OD values were significantly higher in sheep than in all other wild species (Welch test, figure 3).

➢ For chamois, apparent seroprevalence was significantly higher in females than in males (OR=3.15 [1.11-8.95]).

➢ Oldest animals (>8 years old) were significantly more seropositive (OR= 3.73 [1.09-12.84]).

➢ 6 out of 15 young animals (from 0.5 to 2 years old) were found seropositive.

Discussion and Perspectives

➢ These results do not allow us to clearly conclude about transmission direction between wild and domestic ruminants.
➢ An active circulation of pestiviruses has been demonstrated among wild and domestic ruminants in this area.

➢ To determine the epidemiological roles of both wild and domestic ruminants in pestivirus transmission, we need to :

- Perform comparative virus neutralization test in order to:
 - determine the specificity of serological reactions
 - confirm ELISA results concerning differences between species .
- Isolate and characterize circulating viral strain(s) from wild animals.

References: (1) Martin C., Letellier C., Caij B., Gauthier D., Jean N., Shaffii A., Saegerman C. Epidemiology of pestivirus infection in wild ungulates of the French South Alps. *Vet Microbiol.*, 2010, doi:10.1016/j.vetmic.2010.07.010.

(2) Marco L., Rosell R., Cabezon O., Beneria B., Mentaberre G., Casas E., Hurtado A., Lopez-Olivera J.R., Lavin S., Serologic and virologic investigations into pestivirus infection in wild and domestic ruminants in the Pyrenees (NE Spain). *Res. Vet. Science* 87 (2009) 149–153.

(3) Dubois E., Russo P., Prigent M., Thiéry R., Genetic characterization of ovine pestiviruses isolated in France, between 1985 and 2006. *Vet. Microbiol.*, 2008, 130: 69–79.