

Epidemiological Surveillance of the Rabies Virus in Bats in the Northwest of Chubut

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INTRODUCTION

The rabies virus (RABV) causes a deadly zoonotic disease in mammals that affects the central nervous system (Piñero et al. 2012, Biscayart et al. 2018). Transmission mainly occurs through the bite of an infected animal (Piñero et al. 2012). The virus can circulate through two different epidemiological cycles: aerial and terrestrial, with bats being the natural reservoir for the aerial cycle (Piñero et al. 2012, Biscayart et al. 2018). The aim of this study is to present the results of the Passive Epidemiological Surveillance of the rabies virus in urban and rural bats in the Northwest region of Chubut province.

METHODS

Between 2022 and 2024, 55 samples were analyzed from ten locations in Chubut and seven species of insectivorous bats (*Histiotus macrotus*, *H. magellanicus*, *H. montanus*, *Lasiurus varius*, *L. villosissimus*, *Myotis chiloensis*, and *Tadarida brasiliensis*). Specimens were identified by species, sex, and age, and brain samples were collected. These samples were analyzed for the detection of RABV using Direct Immunofluorescence (DIF), viral isolation in BHK-21 clon 13 and Biological Assay (BA; Biscayart et al. 2018) techniques at the Rabies and Small Animals Department of the Animal Laboratory of Senasa. The positive samples were characterized using monoclonal antibodies in Indirect Immunofluorescence (IIF) kindly supplied by the CDC, Atlanta, USA (Table 1).

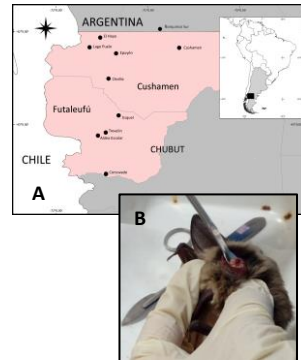


Figure 1: A: map of the area included in the study in Chubut province can be seen. B: process of collecting brain samples from the isolated bats is shown.

RESULTS

Number	Specie	Location	DIF	MIT	Variant
006/23	<i>H. macrotus</i>	Trevelin	Positive	Positive	*
008/23	<i>H. macrotus</i>	Corcovado	Positive	Positive	*
012/23	<i>H. macrotus</i>	Esquel	Positive	Positive	*
021/24	<i>T. brasiliensis</i>	El Hoyo	Positive	Positive	4
024/24	<i>L. varius</i>	Esquel	Positive	Positive	6
025/24	<i>T. brasiliensis</i>	El Hoyo	Positive	Positive	4
026/24	<i>H. montanus</i>	Esquel	Positive	Positive	*
029/24	<i>H. magellanicus</i>	Lago Puelo	Positive	Positive	*
030/24	<i>L. varius</i>	Epuyen	Positive	Positive	*
034/24	Sin determinar	Esquel	Positive	Positive	*
035/24	<i>H. macrotus</i>	Esquel	Positive	Positive	*

Table 1: Positive samples tested. * = Associate Pattern not presented.



Figure 2: A: *Lasiurus varius*, B: *Tadarida brasiliensis*. PH: Analia Gimenez.

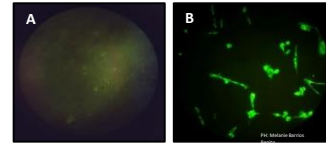


Figure 3: A: stained brain impressions and B: viral isolation in BHK-21, both revealed by direct immunofluorescence.

CONCLUSION

This study confirms the circulation of the rabies virus in its aerial cycle in more than half of the analyzed species of insectivorous bats (*H. macrotus*, *H. magellanicus*, *H. montanus*, *L. varius*, and *T. brasiliensis*) and in 66% of the municipalities assessed in the northwest region of Chubut province. Based on these results, it is recommended to maintain active surveillance to detect cases and transmission risks early, which is crucial for the prevention and control of the disease.

-Biscayart et a. 2018. Guía para la Prevención, Vigilancia y Control de la Rabia en Argentina. Ministerio de Salud y Desarrollo Social Presidencia de la Nación. República Argentina.

-Piñero C., Gury Dohmen F., Beltran F., Martinez L., Novaro L., Russo S., ... & Cisterna D.M. 2012. High diversity of rabies viruses associated with insectivorous bats in Argentina: presence of several independent enzootics. PLoS Neglected Tropical Diseases, 6(5), e1635.