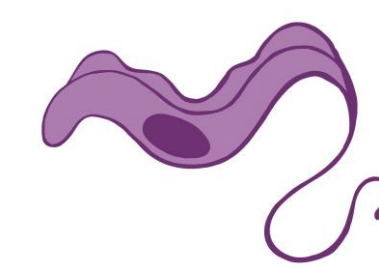




Consejería de Economía, Conocimiento y Empleo
Agencia Canaria de Investigación, Innovación y Sociedad de la Información

Trypanosoma evansi infection in Canary Islands: evolution and control

Melián A., Tejedor M.T., Peláez P., Dolores M., González M., Morales M., Martín S., Corbera J.A.



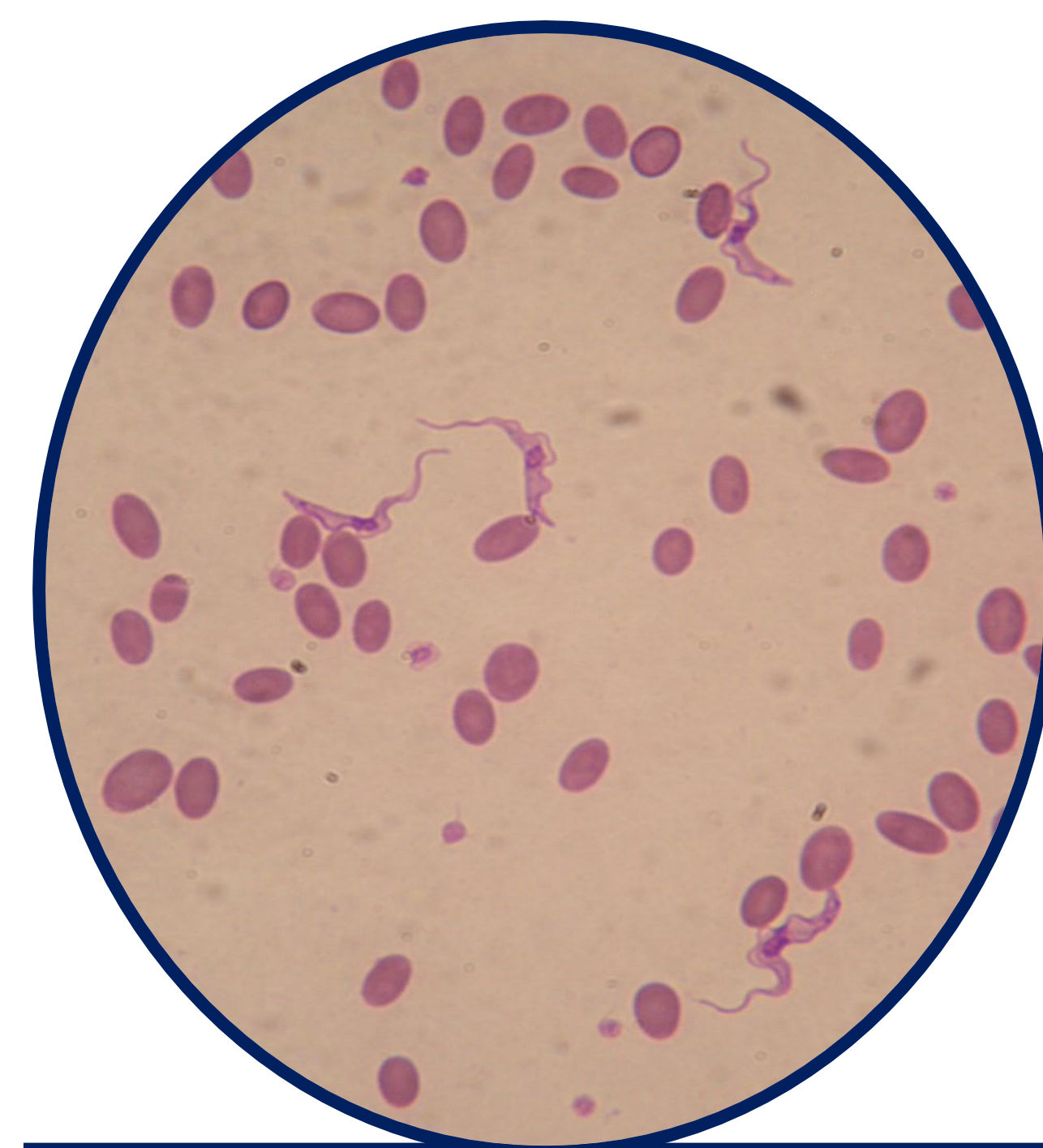
Introduction

Trypanosoma evansi, a haemoparasite belonging to the *Trypanosoma* genus, is responsible for causing the disease known as "Surra" in several mammalian species, especially in dromedaries, considered to be the most susceptible hosts for this disease. It is mainly transmitted mechanically by haematophagous insects, in which, unlike other species of this genus, it does not carry out any biological development or multiplication. This species, which is thought to originate in Africa, was detected in Spain for the first time in 1997, specifically in the Canary Islands, in a dromedary camel. It is known that, historically, dromedaries were imported to these islands from North Africa to carry out tasks related to agriculture and transport.

In the years following the detection of the disease, several epidemiological studies were carried out to determine the prevalence of the disease, finding cases mainly in 5 of the islands: Gran Canaria, Fuerteventura, Tenerife, La Palma and Lanzarote.

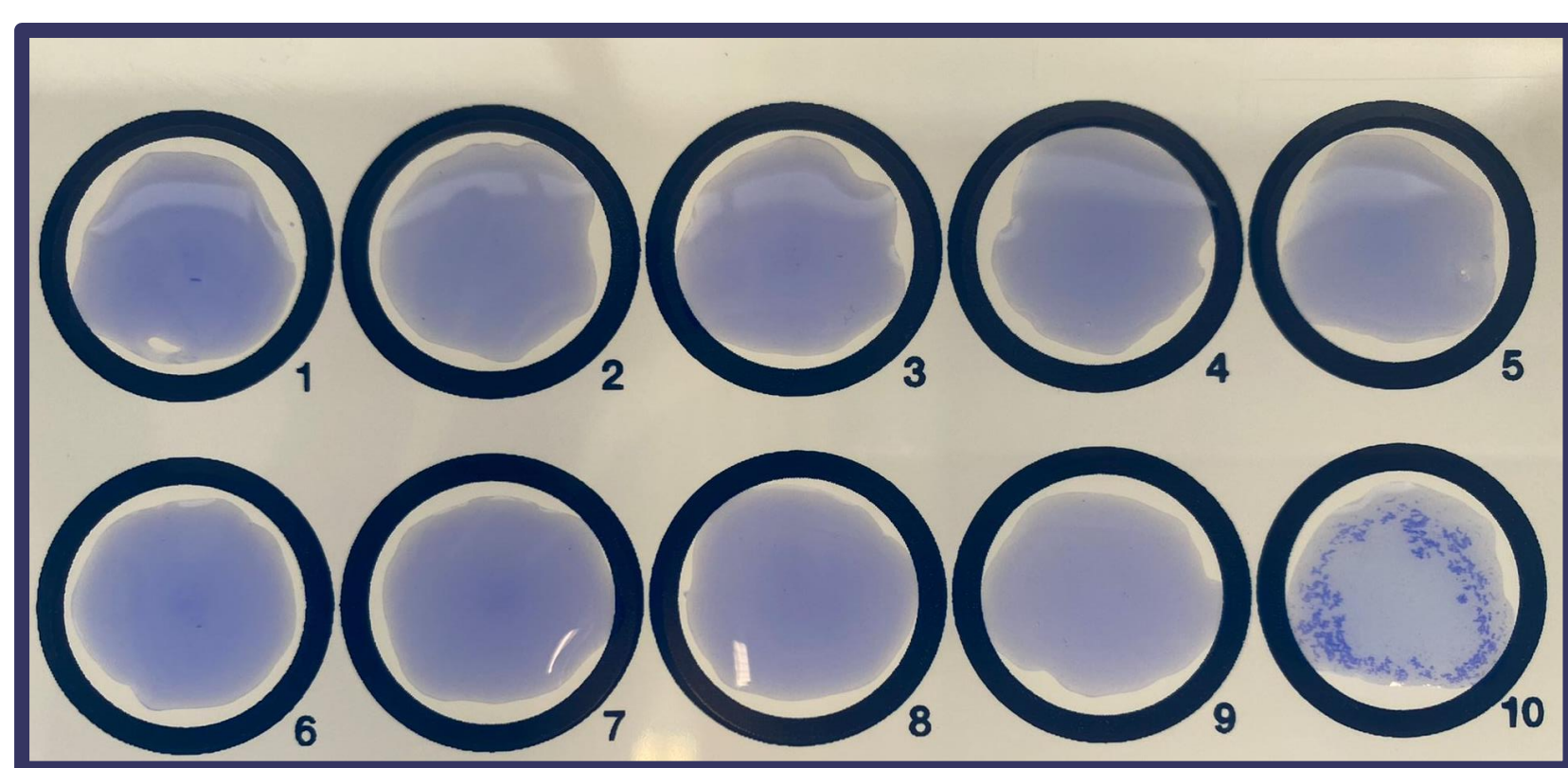
Despite veterinary treatment and control efforts, sporadic outbreaks continued to appear on the islands, especially on Gran Canaria.

This fact then led to the creation, by the Department of Agriculture, Livestock and Fisheries of the Government of the Canary Islands, of a monitoring and control system for the disease in 2017.



T. evansi trypomastigotes in a blood smear of a dromedary camel from the Canary Islands.

Card Agglutination Test (CATT/*T. evansi*).



Example of CATT/*T. evansi* card. Negative reaction (1-9), positive reaction (10). This technique is based on the agglutination of a particular antigen, RoTat 1.2., which is possessed by this *Trypanosoma* species.

Material and methods

Techniques used for sample analysis.

This system (implemented in 2018) consisted of the annual sampling of the entire census of dromedaries in the Canary Islands, and their subsequent analysis.

Polymerase Chain Reaction (PCR).

This technique was performed on CATT/*T. evansi* positive animals to confirm the presence of parasites.

Positive animals were isolated to prevent mechanical transmission and, in some cases, euthanised.

Results and conclusion

Table 1

Island	Year	Number of animals analysed	CATT (+)	CATT (doubtful)	PCR (+)
Gran Canaria*	2018	71	3	6	0
	2019	73	32	4	0
	2020	64	0	0	NT
	2021	33	0	0	NT
	2022	62	0	1	0
Lanzarote	2018	325	36	26	0
	2019	326	6	4	0
	2020	278	0	0	NT
	2021	38	0	0	NT
Fuerteventura	2018	382	1	11	0
	2019	358	13	0	0
	2020	325	0	0	NT
	2021	31	0	0	NT
Tenerife	2018	43	0	0	NT
	2019	45	1	0	0
	2020	42	0	0	NT
	2021	39	0	0	NT
La Palma	2018	6	0	0	NT
	2019	2	0	0	NT
	2020	2	0	0	NT
	2021	2	0	0	NT
	2022	2	1	1	0

This table shows the variation in CATT/*T. evansi* and PCR positive animals since the implementation of the control method. All tested animals on each island, except in Gran Canaria, are included. Table 2 shows the results of two farms in Gran Canaria where numerous cases of the disease have occurred.

Table 2

Date	Number of animals analysed / Not analysed	CATT (+)	CATT (doubtful)	PCR (+)
April 2017	123/11	22	0	5*
July 2017	111/21	21	0	2**
February 2018	126/0	15	0	0
March 2018	123/0	1	17	0
April 2018	123/0	18	6	0
July 2018	121/0	45	0	0
October 2018	125/0	37	12	0
November 2019	125/0	6	0	0
November 2020	125/0	0	0	NT
July 2021	0/115	NT	NT	NT
March 2022	131/0	0	0	NT

As can be seen, due to the correct functioning of this method, the incidence of the disease in the Canary Islands has been gradually reduced over the years, with only 4 confirmed positives for CATT/*T. evansi* and none for PCR in 2022.

References

- Desquesnes, M., Dargantes, A., et al. (2013a) '*Trypanosoma evansi* and surra: A review and perspectives on transmission, epidemiology and control, impact, and zoonotic aspects', *BioMed Research International*. Available at: <https://doi.org/10.1155/2013/321237>.
- Gutiérrez, C. et al. (1998) 'Descripción de un caso de tripanosomosis en el dromedario por *T. evansi* en Canarias', *Medicina Veterinaria*, 6.
- Molina, J.M. et al. (no date) *Seroprevalence of Trypanosoma evansi in dromedaries (Camelus dromedarius) from the Canary Islands (Spain) using an antibody Ab-ELISA*.

