

INTRODUCTION

The importance that arthropod parasites have in veterinarian science is based on its capacity to harm animals. Not only for its direct actions on the host but also for the transmission of some pathogens. A variety of measures have been used historically and are currently used to control this parasites.

OBJECTIVES

- Review the current situation and the advances produced in arthropod's immunological control
- Analyze the reasons which have limited this kind of vaccines

A VACCINE AGAINST ARTHROPODS?

Two approaches to vaccination

- Exploitation of the antigens of naturally acquired immunity
- Vaccination against 'concealed' antigens

TICKS MITES MYIASIS FLEAS MOSQUITOES

IDEAL ANTIGEN FOR VACCINES

- EASILY ACCESSIBLE TO THE HOST IMMUNE EFFECTORS
- CRITICAL FUNCTION
- SHARE CONSERVED EPITOPES AMONG OTHER ARTHROPOD VECTORS
- REDUCE THE VECTOR CAPACITY FOR THE TRANSMISSION OF VECTOR-BORNE PATHOGENS

Tick GARD Gavac

- Reduction of tick infestations on cattle
- Increased animal production
- Decreased incidence of anaplasmosis and babesiosis
- Reduction in the use of acaricides

Table 1. Recombinant proteins used in vaccines against ticks

PROTEIN/ANTIGEN	TICK SPECIES
Bm86	<i>Rhipicephalus microplus</i>
Bm95	<i>Rhipicephalus microplus</i>
Bm91	<i>Rhipicephalus microplus</i>
P29	<i>Haemaphysalis longicornis</i>

Table 2. Crossed-protection for Bm86 (*Rhipicephalus microplus*) against different species of ticks

TICK SPECIES	CROSS-PROTECTION
<i>Rhipicephalus annulatus</i>	✓
<i>Rhipicephalus decoloratus</i>	✓
<i>Rhipicephalus appendiculatus</i>	✗
<i>Amblyomma variegatum</i>	✗
<i>Hyalomma anatolicum</i>	✓
<i>Hyalomma dromedarii</i>	✓

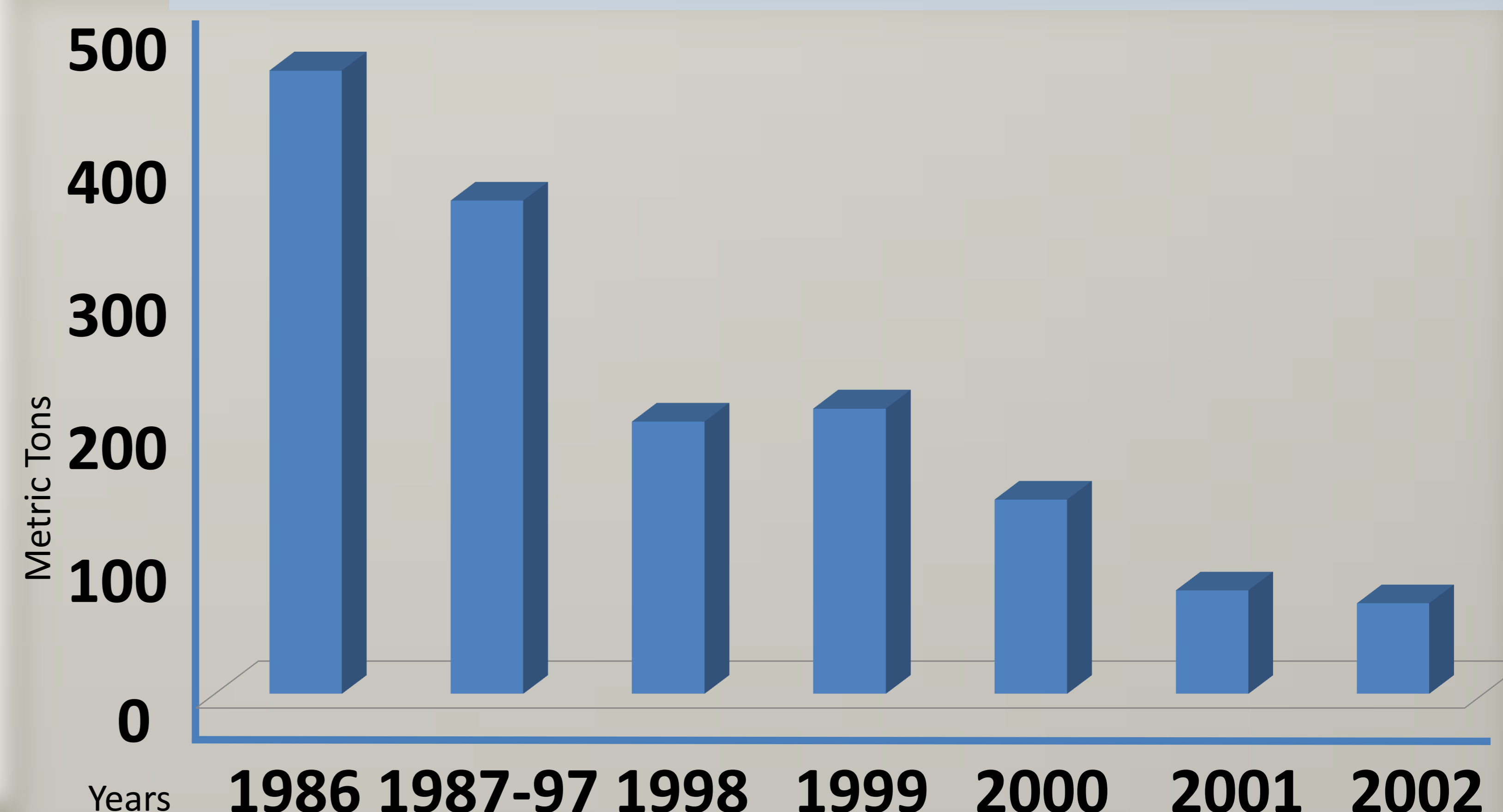


Figure 1. The reduction of the acaricide consumption in Cuba before 1986 and after implementation of the integrated control program in 1995 against *R. microplus* (Rodríguez *et al.*, 2004)

PROBLEMS

- Lack of research and difficulties in identify effective antigens
- Immune responses
- Variety of arthropods
- Acaricides and insecticides
- Development, manufacturing, registration and commercialization of a vaccine is a long and expensive process

CONCLUSION

Immunological control would mean a great scientific advance, however vaccination against arthropods continues being an expectation. It is necessary to overcome all problems to get this control. It's required, therefore, more research in this field and developing new technologies to find new antigenic targets. A future trends of research are multicomponent vaccines or vaccines against multiple arthropods.