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ECOLOGICAL AND EPIDEMIOLOGICAL ASPECTS OF FLAVIVIRUSES AND THEIR VECTORS IN URBAN AND RURAL AREAS OF PARAGUAY

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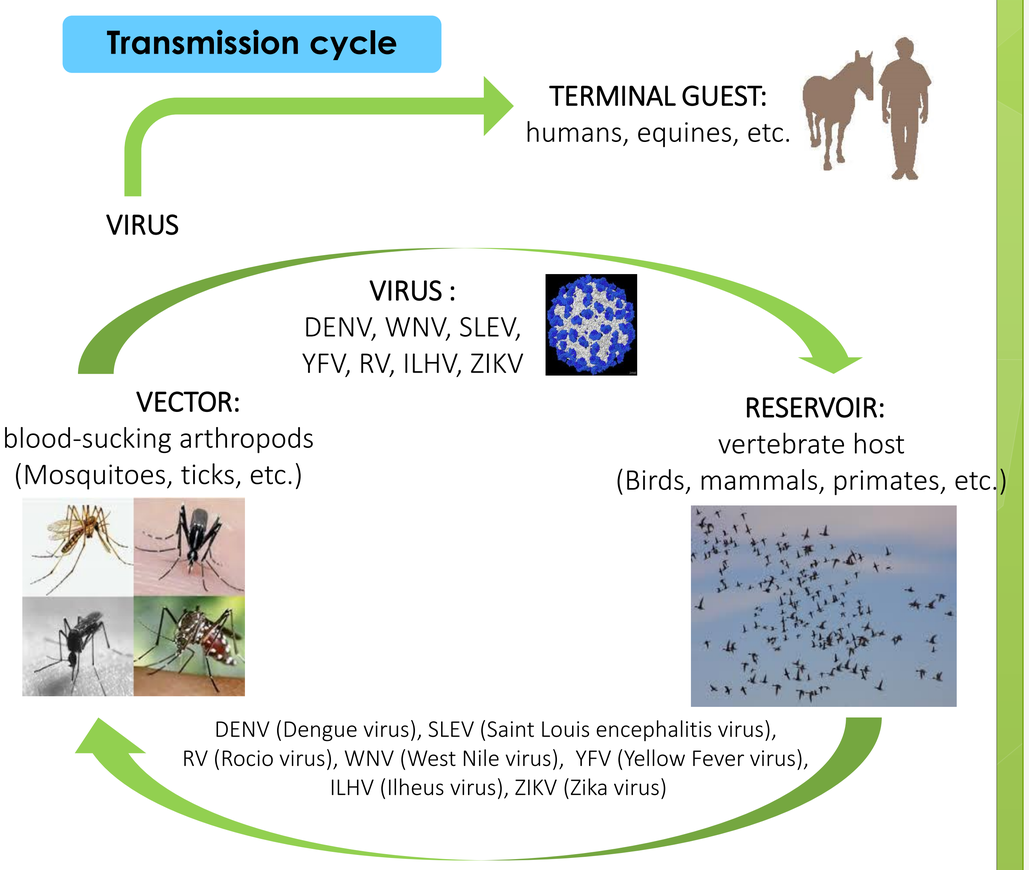
INTRODUCTION

The *Flavivirus* genus includes 53 viral species, they represent a public health problem, among them, the most important in the world are dengue virus (DENV), Zika virus (ZIKV), St. Louis encephalitis virus (SLEV), Yellow fever virus (YFV), West Nile virus (WNV), among others [1,2].

They are responsible for considerable morbidity and mortality, they can cause serious conditions such as encephalitis, haemorrhagic fevers, hepatitis and also febrile diseases in humans [2,3].

To establish and maintain a transmission cycle there are three essential factors: the virus, the arthropod, and vertebrates [4].



The flaviviruses that have been detected in Paraguay are DENV, YFV and ZIKV [5-7]. There are still no reports of other flavivirus circulation in our country. Paraguay is a site that has the appropriate conditions to allow the circulation of other flaviviruses detected in Brazil and Argentina [8-14], since a great diversity of bird[15] and mosquito species have been observed in the country that could act as reservoirs and vectors of these diseases.

OBJECTIVE OF THIS STUDY

Contribute to the knowledge of ecological and epidemiological aspects of flavivirus and its vectors in urban and rural areas of Paraguay.

MATERIALS AND METHODS

Three populations will be studied:

1. **Human population:** 200 sera from individuals with suspected infection by DENV.
2. **Mosquito population:** 8 collections in total: 4 collections in rural areas in the 4 seasons and 4 collections in urban areas (Asuncion) in the 4 seasons.
3. **Bird population:** 8 collections total: 4 collections in rural areas in the 4 seasons and 4 collections in urban areas (Asuncion) in the 4 seasons.

Two different techniques will be applied:

INDIRECT TECHNIQUES: Seroprevalence antibody detection

⬇

Plaque reduction neutralization test (PRNT)

⬇

Neutralizing antibodies (WNV, SLEV)

BIRDS SERA

DIRECT TECHNIQUES: Prevalence of viral genome detection

⬇

RT-*nested* PCR

⬇

Flavivirus genome, SLEV, WNV, etc.

MOSQUITO POOLS
FEBRILE HUMAN SERA

EXPECTED RESULTS

Through the study of 3 populations:

a. Human: identified the cases of infection by other flavivirus than Dengue, variants of Flavivirus circulating and compared to those detected in the region.
b. Mosquitoes from rural and urban areas: identify the species of mosquitoes infected by flavivirus, the viral species, recognize variants of Flavivirus circulating in our country, compared to those detected in the region and identify seasonal variation of mosquitos species.
c. Birds of rural and urban areas: identify the bird species that could act as potential hosts of the flavivirus analyzed and recognize seasonal variation of birds' species.

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