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ISOLATION OF ILHÉUS VIRUS FROM *SABETHES CHLOROPTERUS*  
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# ISOLATION OF ILHÉUS VIRUS FROM *SABETHES CHLOROPTERUS* CAPTURED IN GUATEMALA IN 1956

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In 1956 Rodaniche reported the first isolation of Ilhéus (Ilhéus encephalitis) virus in Central America and reviewed the literature. The virus was recovered from a pool of mosquitoes of the genus *Psorophora*, including principally *P. ferox* but also *P. lutzii* and *P. varipes*. In the present publication a brief report will be made of the isolation of this virus from *Sabethes chloropterus* captured in Guatemala in 1956. This finding is of interest because it represents the first isolation in Guatemala and the first from this species of mosquito.

The mosquitoes were captured by Drs. J. Boshell and G. Bevier of the Pan American Sanitary Bureau in the Motagua valley of Guatemala during the 1956 outbreak of jungle yellow fever there, and forwarded to the Gorgas Memorial Laboratory where they were classified. The principle objective of the investigation was the isolation of yellow fever virus, and the recovery of the Ilhéus virus was an incidental finding. Methods employed in this study have been described in the publication of Rodaniche and Galindo (1957) and need not be repeated here.

A total of 10,251 mosquitoes were received from March through November of 1956 (Table 1). Ilhéus virus was isolated only once, from a pool of 48 *Sabethes chloropterus* captured on April 9 and 10 in the Motagua valley. Four of the six young adult white mice injected intracerebrally with a suspension of these mosquitoes sickened and died or were sacrificed after an incubation period of 15 to 17 days. By the 4th passage the incubation period had shortened to 4 days, with death of all mice injected within 7 days, and by the 8th passage part of the mice were showing slight symptoms in 3 days. Symptoms were tremors, ataxia, spasmodic movements, paralysis, coma and death. Cross immunity experiments and mouse protection tests with a known negative and known positive yellow fever serum showed the virus to be distinct from that of yellow fever. Final classification was based on immunological comparison with the Honduran strain of Ilhéus virus previously mentioned.

Fifteen adult white mice were immunized against the Guatemalan strain and then challenged by the intracerebral injection of approximately  $10^{-5}$  LD/50 of the Honduran strain. All survived throughout a 30-day observation period whereas the entire control group sickened and died within 6 days. In reverse cross-immunity experiments, two groups of 12 mice each, previously immunized against the Honduran strain, were challenged by the intracerebral injection of approximately  $10^{-5}$  LD/50 of the Guatemalan virus in its 8th and 15th mouse passages respectively. There were no deaths among the test animals whereas all controls died in 6 to 7 days. Mouse protection tests also were carried out using pooled hyperimmune mouse serums prepared against each of the two strains.

TABLE 1

Classification of mosquitoes received from the Motagua Valley of Guatemala from March through November, 1956\*

Species or species group	Total
<i>Haemagogus equinus</i> .....	1,711
<i>Haemagogus mesodentatus</i> .....	4,175
<i>Sabethes chloropterus</i> .....	3,304 (1)†
<i>Sabethes</i> spp.‡.....	293
<i>Aedes</i> spp.....	32
<i>Psorophora cingulata</i> .....	2
<i>Psorophora ferox</i> .....	7
<i>Psorophora lutzii</i> .....	369
<i>Trichoprosopon</i> spp.....	27
<i>Wyeomyia</i> spp.....	289
<i>Mansonia</i> spp.....	3
<i>Anopheles</i> spp.....	3
<i>Chagasia</i> spp.....	36
Total.....	10,251 (1)

\* Captures were made by Dr. J. Boshell and G. Bevier of the P.A.S.B.

† Number in parenthesis represents virus isolation.

‡ Not including *S. chloropterus*.

The serum prepared against the Honduran strain neutralized 3.3 log units of homologous virus and 2.6 log units of the heterologous strain respectively. The immune serum prepared against the Guatemalan strain neutralized 2.4 log units of homologous virus and 2.3 of the heterologous strain.

The isolation of Ilhéus virus from mosquitoes captured in Guatemala indicates that this virus was active there simultaneously with yellow fever, although apparently activity was minimal. The capacity of *S. chloropterus* to harbor Ilhéus virus is of especial interest as the same species was also found to harbor yellow fever virus by Rodaniche and Galindo (1957). No isolations were made from a total of 378 *Psorophora*, the genus implicated in previous isolations of this virus in Brazil, Trinidad and Honduras.

#### CONCLUSIONS

The Ilhéus virus was isolated from a pool of 48 *Sabethes chloropterus* captured in the Motagua Valley of Guatemala in 1956. This isolation represents the first from Guatemala and the first from this species of mosquito.

#### REFERENCES

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