Chikungunya

Evaluation of Compound X in a mouse model of CHIKV disease

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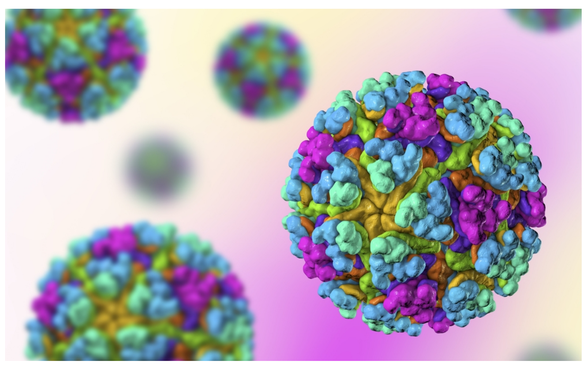
Introduction

Chikungunya is an infectious alphavirus spread by mosquitos. Over the last 15 years there have been various outbreaks in the Americas, the Caribbean, and across Asia and Africa. Although mortality rates are low, the disease has been shown to have high morbidity and chronic effects.

- There are currently no approved antivirals for treatments of CHIKV infection.
- **Hypothesis:** The small molecule, compound X, will show antiviral activity in a mouse model of CHIKV infection.

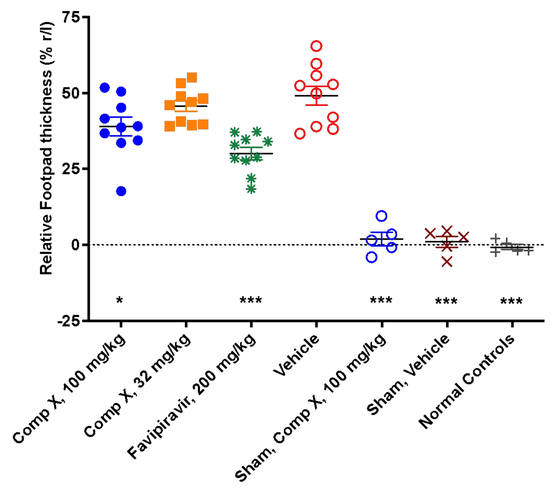


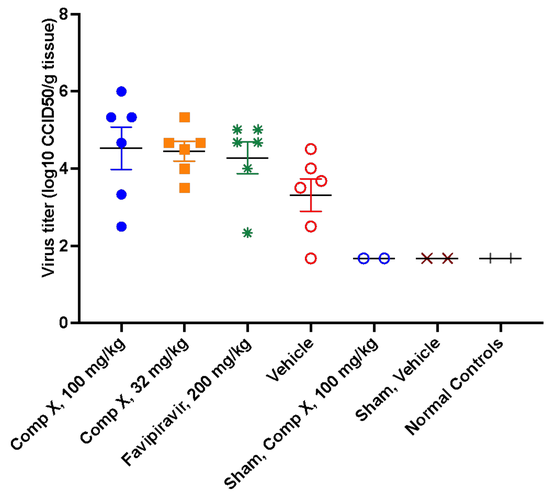
Chikungunya has been classified as an alphavirus belonging to the Togaviridae family. The virus is single stranded, positive sense RNA genome surrounded by a lipid envelope.

Methods

An initial toxicity study was performed with Compound X concentrations of 100, 32, and 10 mg/kg/d. No toxicity signs or weight loss were observed. For the infection study, male and female mice were randomly assigned to groups and were treated for 7 days with Compound X at final doses of 100 or 32 mg/kg/d via intraperitoneal administration twice daily. Mice were infected with CHIKV via s.c. footpad and hock injections. A caliper was used to measure footpad thickness of the right and left hind legs daily from 3-6 dpi.

- All data for footpad swelling, spleen weights, and virus titers were analyzed using one-way ANOVA using Bonferroni group comparison.





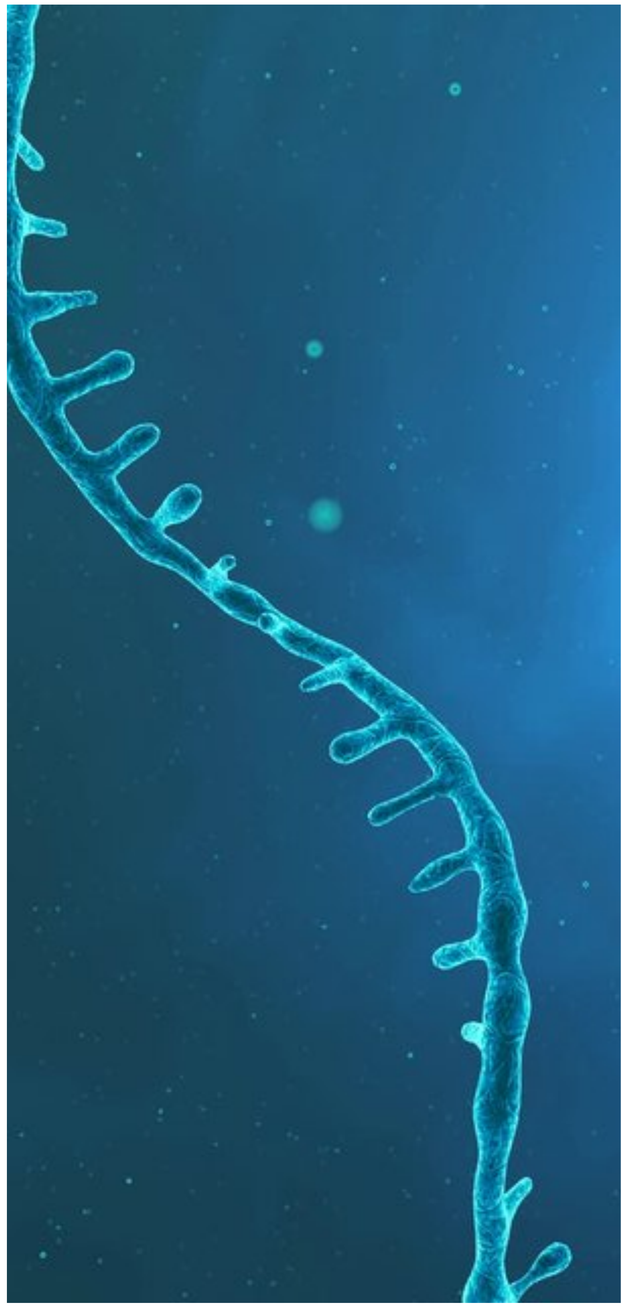
Results

No significant improvement in footpad swelling was observed in animals treated with Compound X compared to the controls.

There was also no significant reduction of virus titers in the right hind leg or the serum in groups treated with Compound X compared to the control groups.

Conclusion

Overall, the small molecule **Compound X did not result in significant improvement in the disease parameters** set for the study. It can be concluded that Compound X is not an effective treatment in mouse models of CHIKV infections. Therefore, further evaluation toward clinical development is not warranted.



Works Cited:

Dagley, A., & Julander, J. G. (2013). A mouse model of chikungunya virus with utility in antiviral studies. Antiviral Methods and Protocols, 439–448. https://doi.org/10.1007/978-1-62703-484-5_33

Leparc-Goffart, I., Nougairede, A., Cassadou, S., Prat, C., & de Lamballerie, X. (2014). Chikungunya in the Americas. The Lancet, 383(9916), 514. https://doi.org/10.1016/s0140-6736(14)60185-9

Traverse, E. M., Millsapps, E. M., Underwood, E. C., Hopkins, H. K., Young, M., & Barr, K. L. (2022). Chikungunya immunopathology as it is present in different organ systems. Viruses, 14(8), 1786. https://doi.org/10.3390/v14081786