

Preliminary antiviral and virucidal activity of Amazonian medicinal plants against Chikungunya and Herpes viruses

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Plants have been used for millennia to treat diseases and infections. The Brazilian Amazon biome provides great biodiversity responsible for hosting countless bioactive compounds that have few studies and that can control infections caused by viruses. Herpes Simplex Virus type 1 (HSV-1) generates latency-stage infection and its frequent reactivation is related to the development of cancers and neuropathologies. The Chikungunya Virus (CHIKV) is an arbovirus transmitted mainly by mosquitoes of the *Aedes* genus, which raises concern due to its occurrence in tropical climates along with other arboviruses, such as Dengue and Zika. Besides, there are no vaccines or medicines approved for treating CHIKV infections. Thus, the objective of this study was to perform the antiviral screening of Amazonian medicinal plants against HSV-1 (KOS strain) and CHIKV. For this, 17 extracts from eight different plants were submitted to cytotoxicity test in the VERO lineage through the sulforhodamine B colorimetric assay, which allowed the calculation of the 50% cytotoxic concentrations (CC₅₀). Based on that, an antiviral screening was carried out at non-cytotoxic concentrations, by viral plaque number reduction assay, and the most active extracts were selected for new antiviral tests to determine their 50% viral replication inhibitory concentrations (IC₅₀), and allowing the calculation of the selectivity index (SI=CC₅₀/IC₅₀). Afterward, the virucidal potential was also evaluated. Among the tested extracts, 9 showed promising results against CHIKV and HSV-1. The extracts of *Licania macrophylla*, *Manilkara elata* and *Vouacapoua americana* were the most active with SI values >10 against both viruses models. Concerning the virucidal potential, all tested extracts (ethanolic extract of leaves and aqueous extract of bark from *Licania macrophylla*, ethanolic extracts of the barks from *Manilkara elata* and *Vouacapoua americana*) showed 100% of direct viral inactivation at the tested concentrations (50 to 6,25 ug/mL). Therefore, three species significantly inhibited CHIKV and HSV-1, particularly taking into account their virucidal action, opening the field for the development of biotechnological products for topical use or disinfectants with virucidal activity.

Key-words: Antiviral; Virucidal; Chikungunya virus; Herpes virus

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