BIOASSAY-GUIDED FRACTIONATION OF PLANT AND FUNGI EXTRACTS WITH INHIBITORY PROPERTIES AGAINST MAYARO VIRUS

Autores: Tamiris V M Souza[1]; Eliza F Souza[1]; Carolina C P Mazarro [1]; Mariana C Ferreira[1]; Daniela N B Maia[1] ; Allison S P Caldeira[1]; Anna B O Mendes[1]; Gabrielle A R Souza[1]; Carlos E C Silva[1]; Tânia M A Alves[1]; Jaquelline G Oliveira[1]

Filiação: 1. Fiocruz Minas – Instituto Rene Rachou- Av. Augusto de Lima, 1715 – Barro Preto – Belo Horizonte - MG, 30190-002

Autor correspondente: Tamiris V M Souza – tsouza@aluno.fiocruz.br

Mayaro fever, caused by the Mayaro virus (MAYV), is an arbovirus disease with unspecific symptoms, such as headache, fever, nausea, vomiting, myalgia, and especially arthralgia (joint pain) that can persist for months or years post-infection, limiting the individual's mobility. Knowing that there is no vaccine or specific treatment for this disease, our study aims to identify natural substances capable of inhibiting, *in vitro*, the multiplication of MAYV to discover potential antivirals. To do so, initially, we performed screening of cytotoxic activity and antiviral activity of 145 crude extracts, including 107 of plant origin and 38 obtained from fungi, against MAYV using the MTT method. We identified that extracts of *Baccharis cf. vernonioides*, *Chromolaena squalida*, *Habenaria petalodes,* and *Lippia alba* plant species and extracts obtained from *Penicillium brevicompactum, P. chrysogenum* and *Pseudogymnoascus sp* were active against MAYV. *H. petalodes* extract showed Selectivity Index (SI) > 40 against MAYV. To identify natural substances with anti-MAYV properties, the extracts of *H. petalodes* and *Pseudogynoascus sp.* were subjected to bioassay-guided fractionation by ultra-high-performance liquid chromatography coupled to high-resolution mass spectrometry (UHPLC-HRMS). Active fractions were analyzed using MassBank and Pubchem databases. The active chromatographic fraction of the extract of *H. petalodes* were detected 31 unidentified ions. Regarding the *Pseudogymnoascus sp* extract, a polyunsaturated fatty acid of the omega 6 family and 31 unidentified ions were detected. The identification of ions corresponding to the major peaks as well as the investigation of the antiviral action of the annotated substances is underway. Our results demonstrate that

plant and fungal extracts are rich sources of antiviral substances that may, in the future, serve as a basis for drug production for the treatment of Mayaro fever.

Financial support: Fiocruz Minas, Projeto INOVA FIOCRUZ, Fapemig, Plataforma de bioprospecção, Programa de Pós-graduação em Ciências da Saúde.