EVALUATION OF THE ANTIVIRAL ACTIVITY OF SYNTHETIC NAPHTHOQUINONES AND ALGAE (Plocamium brasilienses) MONOTERPENES IN HERPES SIMPLEX VIRUS TYPE-1 (HSV-1) REPLICATION

Introduction and objectives: The infection with herpes simplex virus type-1 (HSV-1) can cause mucocutaneous infections and encephalitis, as well as genital infections. HSV-1 strains are resistant to antiviral drugs such as acyclovir (the reference drug), making the search for new molecules, especially with different mechanisms of action, a constant urgency. Several literature data as well as our group showed that in early stages of viral infection occurs altered activity of the enzyme Na/K ATPase and changes in intracellular Na+ and K+ levels, affecting the mechanism of viral replication. The goal of this study is to evaluate the antiviral potential of synthetic naphthoquinones and extracted monoterpenes from seaweed *Plocamium brasilienses* on HSV-1 replication correlating the antiviral activity with the possible inhibitory effect of ATPase.

Materials and methods: The cytotoxicity was assessed by LDH method on Vero cells. The analysis of antiviral activity was done by plate reduction as well as time course studies; virucide activity through inactivation of the viral particule. NKA activity was measured by non-radioactive Rb+ incorporation by cells. Results and conclusions: The synthetic substance 2-hydroxy-3- (2-thienyl)-1, 4-naphthoquinone (AN6) and dichloromethane purified fraction (39-42) from *Plocamium brasilienses* reduced the production of viral plaques with low cytotoxicity. The virucidal effect was observed only with the drug AN6. AN6 inhibited the adsorption, penetration and gamma phases of viral replicative cycle while the fraction 39-42 inhibited just the beta phase. AN6 inhibited the activity of Na+ K+ ATPase of the infected cells among 6 to 20 h p.i. The low cytotoxicity of AN6 allows us to correlate the inhibition of the NA/K ATPase with the inhibition of viral replication. Acknowledgements: Financial support: CNPq, FAPERJ and PROPPi-UFF. Key Words: HSV-1, antiviral, NA/K ATPase.