

Title: MANGIFERIN INHIBITS THE REPLICATION OF HERPES SIMPLEX VIRUS

Authors: Rechenchoski, D.Z. ¹, Bomfim, W.A. ¹, Espada, S.F. ¹, Lopes, N. ¹, Godoi, A.M. ¹, Galhardi, L.C.F. ¹, Nozawa, C. ¹, Ricardo, N.M.P.S. ², Linhares, R.E.C. ¹

Institutions: ¹ UEL - Universidade Estadual de Londrina (Rodovia Celso Garcia Cid (PR 445), km 380 - Campus Universitário, 86057-970, Londrina, Paraná, Brasil).

² UFC - Universidade Federal do Ceará (Avenida da Universidade, 2853, Benfica, 60020-181, Fortaleza, Ceará, Brasil).

Abstract

Mangiferin is the major constituent of *Mangifera indica* with multiple proved pharmacological activities, such as, antitumor, antioxidant, antidiabetic, antiallergic, anti-inflammatory, antifungal and antiparasitic. Its antibacterial activity has been shown to several species including *S. aureus* and *E. coli*. Moreover, antiviral activity was also demonstrated to HIV-1 and HSV-2. Considering the high prevalence of HSV infections and the incidence of severe disease in immunocompromised, the search for new anti-herpetic compounds from natural sources has been encouraged. One of the main reasons is because these products are thought to be prone to act in different stages in virus replication, simultaneously, minimizing drug-resistant strains selection. The aim of this study was to evaluate the activity of mangiferin against HSV-1 in cell cultures. The activity of the compound was investigated by the following protocols: a) The time-of-addition assay, before and after infection (-2h, -1h, 0, +1h, +2h, +4h, +8h); b) Virucidal and the inhibition of adsorption assays. The mangiferin 50% cytotoxic concentration (CC₅₀), carried out by MTT assay, was above 2,000 µg/mL and the 50% inhibitory concentration (IC₅₀), by plaque reduction assay, 48.5 µg/mL, and the selectivity index (SI) >41.23. Mangiferin was tested at 200, 100, 50 and 25 µg/mL. Preliminary, the mangiferin showed high antiviral activity when added concomitantly with viral infection, at the highest concentration (200 µg/mL), with the percent of viral inhibition (%IV) of 96.8%. At the same concentration, the compound inhibited HSV-1 in 41.1% and 29.2%, when placed 1h and 2h post infection (pi.), respectively. A slight increase was observed, for the times 4h and 8h pi., with 60.8% and 48.7% virus inhibition, respectively. For virucidal assay, mangiferin demonstrated inhibition of 100%, 95.8%, 74.6% and 26.6% at 200 µg/mL, 100 µg/mL, 50 µg/mL and 25 µg/mL, respectively. The inhibition of virus adsorption assay showed 79.4%, at the highest concentration (200 µg/mL). Treatments before infection (prophylactic effect) were not significant, for all the concentrations. In conclusion, mangiferin may be a potential candidate for the control of HSV-1 infection, however, further experiments should be performed to better understanding of the mechanism by mangiferin in the replication of HSV-1.

Keywords: Antiviral, HSV-1, mangiferin.

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