Antioxidant and anti-inflammatory effects of diphenyl diselenide on genital lesions caused by herpes simplex virus 2

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INTRODUCTION: Herpes simplex virus type 2 (HSV-2) is becoming wondrously prevalent worldwide and is the most common cause of genital ulcer disease in humans. The replicative activity of viruses can trigger stress pathways, including those induced by oxidative stress (Kavouras et al., 2007). Studies have reported an increase in inflammatory mediators and reactive oxygen species (ROS) formation during HSV-1 brain infection (Schachtele et al., 2010) and HSV-2 genital infection (Sartori et al., 2012). (PhSe)₂ is an organic selenium compound and the interest in studying this molecule is due to its pharmacological actions both in vivo and in vitro, mostly related to antioxidant and anti-inflammatory properties (Nogueira et al., 2010).

MATERIAL AND METHODS: To study the antioxidant and anti-inflammatory properties of (PhSe)₂, female BALB/c mice were pre-treated orally with (PhSe)₂ (5mg/kg) once a day for five days before and five days after viral infection by HSV-2 in genital area (10 µl-10² PFU/ml⁻¹, intravaginal inoculation at day 6) totaling ten days of treatment. Acyclovir (5mg/kg, i.g.) was used as a positive control. Antioxidant property was determined by the measurement of reactive species in genital tissue (Loetchutinat et al., 2005) and the anti-inflammatory property was determined by the measurement of myeloperoxidase activity (MPO) (Grisham et al., 1986).

RESULTS AND DISCUSSION: The results demonstrated that the treatment with (PhSe)₂ attenuated the increase of RS levels as well as decreased MPO activity in vaginal tissues of mice in comparison to untreated infected group. Unfortunately the same effects could not be observed with the acyclovir treatment. CONCLUSION: In fact, (PhSe)₂ revealed an activity against HSV-2 infection animal model though modulation of inflammatory response and reduction of virus-induced oxidant injury.

Keywords: HSV-2; selenium; oxidative stress; inflammation.

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