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ANTIVIRAL ACTIVITY OF PUNICA GRANATUM SPECIES PLENIFLORA, SAVEH BLACK LEATHER, AND SWEET ALAK AGAINST HERPES SIMPLEX VIRUS TYPE 1

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Abstract

Background: *Herpes simplex virus-1, commonly known as oral herpes, is a highly contagious viral infection in humans. Various therapies and clinical management strategies have treated Herpes simplex virus-1 infection, but drug resistance is a concern, which has sparked an obsession with herpes simplex virus therapy. Therefore, interest in herbal medications with antiviral properties has increased. This research aimed to investigate the antiviral activity of pomegranate flower extracts on herpes simplex virus-1 type 1 in Vero cells under in vitro conditions.*

***Material andMethods*:** *This study evaluated the anti-herpetic effect of pomegranate flower extracts, and the plaque reduction assay was performed on Vero cells. For cytotoxicity determination of pomegranate flower extracts, 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide was used. The total flavonoid and phenolic contents of three varieties of Punica granatum (P. granatum) were measured based on gallic acid (mg/g) and rutin equivalents (mg/g), respectively.*

Results: *Pomegranate flower extracts had no cytotoxic impact at doses ranging from 80 to 140 µg/ml. Our study revealed that pomegranate flower extracts prevented the growth of viral plaques, and the IC_{50} values of three P. granatum species—pleniflora, Saveh Black Leather, and Sweet Alak—were 109.63, 131.24, and 128.87 µg/ml, respectively. Also, evaluation of total phenolic and flavonoid content showed that P. granatum var. pleniflora (Golnare farsi) had the highest total phenolic and flavonoid content (17.8 mg/g of gallic acid and 2.2 mg/g of rutin equivalents, respectively).*

Conclusion: *The pomegranate flower extracts have an inhibitory impact on herpes simplex virus-1 and could be used as an anti-HSV-1 agent in further investigation.*

Keywords: *Antiviral activity, Cytotoxicity, Punica granatum, Herbal medicine, Herpes.*

Introduction

One of the most common and recurrent epitheliotropic pathogens is the Herpes simplex virus (HSV), which belongs to the family of Herpesviridae and can cause epithelial cell infection in human

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