



Abstract

Isolation and Elimination of Latent and Productive Herpes Simplex Virus from the Sacral and Trigeminal Ganglions [†]

Bernard Middleton ^{1,*} and Susan Michelle Cosgrove ²

¹ Department of Virology, ACU, North Sydney NSW 2059, Australia

² Department of Research and Technology, Synergy Pharmaceuticals Pty Ltd, Sydney NSW 2000, Australia; sarahbutroff1975@gmail.com

* Correspondence: bnardmiddleton@gmail.com

[†] Presented at Viruses 2020—Novel Concepts in Virology, Barcelona, Spain, 5–7 February 2020.

Published: 22 June 2020

Abstract: There is an immediate need for alternative anti-herpetic treatment options effective for both primary infections and reoccurring reactivations of herpes simplex virus types 1 (HSV-1) and 2 (HSV-2). Alternatives currently approved for the purposes of clinical administration includes antivirals and a reduced set of nucleoside analogues. The present article tests a treatment based on a systemic understanding of how the herpes virus affects cell inhibition and breakdown, and targets different phases of the viral cycle, including the entry stage, reproductive cross mutation, and cell-to-cell infection. The treatment consisted of five immunotherapeutic core compounds (5CC), which were hypothesized to be capable of neutralizing human monoclonal antibodies. The tested 5CC were noted as being functional in the application of eliminating the DNA synthesis of herpes viral interferon (IFN) - induced cellular antiviral response. They were here found to neutralize antiviral reproduction by blocking cell-to-cell infection. The activity of the 5CC was tested on RC-37 in vitro using an assay plaque reduction and in vivo against HSV-1 and HSV-2. The 50% inhibitory concentration (IC₅₀) of 5CC was 0.0009% for HSV-1 plaque formation and 0.0008% for HSV-2 plaque formation. Further tests were performed to evaluate the susceptibility of HSV-1 and HSV-2 to antiherpetic drugs in Vero cells after virus entry. There were high-level markers of the 5CC virucidal activity in viral suspension of HSV-1 and HSV-2. These concentrations of the 5CC are nontoxic and reduced plaque formation by 98.2% for HSV-1 and 93.0% for HSV-2. Virus HSV-1 and HSV-2 titers were reduced significantly by 5CC to the point of being negative, ranging 0.01–0.09 in 72%. The results concluded the 5CC as being an effective treatment option for the herpes simplex virus.

Keywords: Synergy Pharmaceuticals Herpes; Herpes Cure; Synergy Herpes Cure



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).