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Induction of multiple pro-inflammatory cytokines by respiratory viruses and reversal by standardized Echinacea, a potent antiviral herbal extract.

[Sharma M](#), [Anderson SA](#), [Schoop R](#), [Hudson JB](#).

Source

Department of Pathology & Laboratory Medicine, University of British Columbia, Heather Pavilion, Vancouver, Canada. manjusharma49@gmail.com

Abstract

Several viruses associated with upper respiratory diseases have been shown to stimulate the secretion of pro-inflammatory cytokines, including chemokines, sometimes in the absence of viral cytopathology. We evaluated the ability of a standardized preparation of the popular herbal medicine Echinacea (Echinaforce, an ethanol extract of herb and roots of *E. purpurea*, and containing known concentrations of marker compounds) to inhibit the viral induction of various cytokines in a line of human bronchial epithelial cells (BEAS-2B), and in two other human cell lines. All of the viruses tested, rhinoviruses 1A and 14, influenza virus, respiratory syncytial virus, adenovirus types 3 and 11, and herpes simplex virus type 1, induced substantial secretion of IL-6 and IL-8 (CXCL8), in addition to several other chemokines, depending on the virus, although only viable viruses were able to do this. In every case however Echinacea inhibited this induction. The Echinacea preparation also showed potent virucidal activity against viruses with membranes, indicating the multi-functional potential of the herb. These results support the concept that certain Echinacea preparations can alleviate "cold and flu" symptoms, and possibly other respiratory disorders, by inhibiting viral growth and the secretion of pro-inflammatory cytokines.