Journal of Innovations in Pharmaceutical and Biological Sciences (JIPBS)
ISSN: 2349-2759
Available online at www.jipbs.com

Research article

The phytomedicine *Echinacea Purpurea* contains light dependent and light-independent antiviral activities

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Key words: *Echinacea purpurea*, antiviral, photosensitizer, influenza virus, rhinovirus.

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Abstract

Antiviral activities have been demonstrated in many medicinal plant extracts, and in some cases these activities were light dependent, due to the presence of photosensitizers. Certain preparations of *Echinacea purpurea* were shown recently to contain virucidal activities against membrane containing viruses, such as influenza viruses, but significantly less activity against rhinoviruses, the common cold viruses, in conventional assay conditions. We therefore investigated the possibility that optimum antiviral activity might require light, and that furthermore, under the conditions resembling those of normal oral consumption, ie. brief exposure to relatively high concentrations of *E. purpurea* extracts, additional antiviral activities could be manifest. Light dependent activity was revealed by exposing viruses to dilute extracts of *E.purpurea* in the presence of visible light in the 400 – 550 nm range (blue part of the spectrum), but in addition, at high concentrations resembling normal consumption of the extract, a light-independent activity was observed against rhinovirus as well as influenza virus and herpes simplex virus. At the lower *E. purpurea* concentrations optimal activity required continuous exposure to light in the presence of the virus, suggesting the involvement of short-lived radicals such as singlet oxygen. These results provide further evidence to support the use of standardized *E. purpurea* extracts, at recommended doses, as potent virucidal agents in the treatment of colds and other respiratory virus infections.