Abstract

Investigation of Antiviral Properties of Medicinal Plant Extracts

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Plants have been used as folk remedies and ethnobotanical literature has described the usage of plant extracts, infusions and powders for centuries for diseases now known to be of viral origin. There is an increasing need for search of new compounds with antiviral activity as the treatment of viral infections with the available antiviral drugs is often unsatisfactory due to the problem of viral resistance coupled with the problem of viral latency and conflicting efficacy in recurrent infection in immunocompromised patients. Ethnopharmacology provides an alternative approach for the discovery of antiviral agents, namely the study of medicinal plants with a history of traditional use as a potential source of substances with significant pharmacological and biological activities. The Indian subcontinent is endowed with rich and diverse local health tradition, which is equally matched with rich and diverse plant genetic source. A detailed investigation and documentation of plants used in local health traditions and ethnopharmacological evaluation to verify their efficacy and safety can lead to the development of invaluable herbal drugs or isolation of compounds of therapeutic value.

A number of plant extracts reported in traditional medicine to have antiinfective properties against Herpes Simplex Virus Type- I & II, Polio virus type I, Adeno Virus type VIII and Influenza Virus Type A (H1N1) were studied in our laboratory and were also screened for antiviral activity. The present study was undertaken to test the twenty five extracts of four medicinal plants namely Sida cordifolia L., Sida actua Burm., Sida retusa L., and Sida spinosa L., were for their antiviral activity against mentioned viruses.

Whole plant parts of four medicinal plants belonging to family Malvaceae used in the traditional system of medicine collected from south India were tested for their antiviral activity.
Among all the twenty five extracts tested from four different plants, Sida cordifolia showed promising antiviral activity against DNA (HSV I & II, HSV TK- and Adenovirus type VIII) and RNA (Poliovirus type-I and Influenza virus type A (H1N1). The extracts Tol, HA and MeOH showed promising activity which contains alkaloids and phytosterols and those extracts were further fractioned to separate the alkaloids from HA and MeOH and phytosterols from Tol extracts. The activity of isolated fractions and the crude extracts were compared. The hydro alcohol and toluene extracts were further screened for in vivo antiviral studies against HSV-I 7401 wild type virus where toluene extract significantly delayed the development and progression of skin lesions and prolonged mean survival time (P < 0.05 by paired t-test) as compared with control (1% DMSO in distilled water treatment). Against Influenza Hydroalcohol extract of Sida cordifolia showed highest selectivity index of 41.

The results from this preliminary investigation provide evidence of the importance of ethnopharmacology as a guide to the screening of biologically active plant materials. We used 100 per cent inactivation to define an extract with antiviral activity, but many extracts had partial antiviral activity.

With the present in vitro and in vivo investigation it is concluded that the toluene extract of sida cordifolia L. is most potent followed by hydroalcohol and methanol extract when compared to the standard drugs available. However, further in depth clinical investigation may be required to confirm these studies.