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Medicinal importance of *Ferula asafetida* oligo-gum resins against infective diseases

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Abstract

Ferula foetida oligo-gum resin containing phytochemicals with anti-viral properties. In order to investigate medicinal values of *ferula assa-foetida* a literature searches were performed through PubMed and PMC academic publications. It contains five sesquiterpene cumarines namely, conferone, badrakemin, fessol, isosamarcandin and samarcandin with anti-viral properties against Rhinovirus (HRV) and Influenza A H1N1. Farnesiferol C and Farnesiferol b are novel chemical scaffolds with HRV-2 inhibiting potential at low micromole and mode of inhibition action was prevention of rhinovirus adsorption (HRV-2) and/or uncoating of the capsid of virus. 5'S-hydroxyumbelliprenin and 8'-acetoxy-5'S-hydroxyumbelliprenin, methyl galbanate, galbanic acid, farnesiferol-C, farnesiferol-A, conferol showed greater potency against influenza A virus (H1N1) (IC₅₀ 0.26-0.86 µg/mL) than amantadine. Several studies demonstrated that cytotoxic and antitumor activity of Galbanic acid. Additionally, exhibits anti-bacterial effects, anti-diabetic effects, anti-fungal, antiulcer genic effect and hypotensive effects. Asafoetida oligo-gum resin will be beneficial in anti-viral drug productions against disease forming viruses.

Keywords: *Ferula foetida*, anti-viral, oligo-gum, phytochemicals

Introduction

From the beginning of the 2020, attention of the health communities has been highly focused on the viral mitigation procedures and human immunity enhancement treatments again due to the pandemic situation of the viral infections (COVID-19). Meanwhile health community of the Asian countries are concerning to herbal based precautions against the viral infections. Hence identifying novel antiviral drugs is more important and natural products are an excellent source of these discoveries when concerning the Ayurveda medicine for viral disease, *Ferula foetida* play important role, regarding antiviral treatments. Phytochemistry of the oligo gum resins of this plant is more critical.

It is reported that the name 'Assa-foetida' derives from the Latin word meaning the 'carrier of bad smell.' It is also true that *asafoetida* is very often referred to as the 'Devil's dung,' which indicates the degree of unpleasant organoleptic character it has. However, it is interesting to note that asafetida's other common name is 'Food of God,' mainly due to health benefits and medicinal effects [1]. *Ferula foetida* is a perennial that grows by 1.5 m to around 2 m and requires dry or moist soil. For the medicinal as well as for culinary purposes, the dried latex (oleo gum resin) obtained by making deep incisions in the roots or rhizomes is preferred [2].

The flowering stems are 2.5-3 m tall and 10 cm wide and hollow. These flowering stems have a number of schizogenic ducts that produce resinous gums in the cortex. The small, dirty yellow-colored flowers are produced in large compound umbels. This plant's fruits are oval, small, flat, reddish-brown in color and contain milky. Roots are thick, solid, and pulpy. The bad scent originates from the resin-like gum extracted from the stem and roots [3, 4]. The plant is commonly known as 'hing' in hindi, 'hingu' in Sanskrit, 'perunkayam' in Sinhala, 'perungayam' in Tamil and "Asafoetida" in English. (ENVIS Centre of medicinal plants).

Phyto chemistry of the *Ferula foetida* reveals that cumarines and sesquiterpenes cumarines have been identified as the main phytochemical compounds. A large number of sesquiterpene cumarines have been reported from the *asa-foetida* [5].

Ferula assa-foetida found to have a range of activities such as antioxidant, antiulcer, hepato protective, antimicrobial, antimicrobial, although some recent studies have shown that it has an antiviral activity that is active against influenza A (H1N1) virus [6]. In addition to the above-mentioned effects, the oligo gum of the *Ferula foetida* shows gut health potential as well.

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