

Herbal Treatment and Home Remedies of Dengue

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ABSTRACT:

Among the most serious and considerable matters related to public health, Dengue fever which is caused by viral infection has become the most significant health issue globally. For the treatment of Dengue fever, unluckily there is no such drug classification which posses any activity against the viral infection, nevertheless, many botanical agents have found to be efficacious in treating the infection, though it's imperative to execute and bring about research on these medicinal plants that have been found to be potent and non-toxic for treating dengue fever. The remedial agents which are found to be efficient in this regard are papaya, leaves of Neem tree, basil, coriander, barley grass as well as fenugreek and juice of pomegranate. The objective of this review article is to make available up-to-date methodologies intended for the treatment of dengue.

Keywords: Dengue viral infection, anti-viral agents, medicinal plants

INTRODUCTION

A virus-related infectious disease, dengue that spread by mosquitoes, is very severe disease[1]. One of the most lethal complications of Dengue fever is hemorrhagic shock which is referred as Dengue Hemorrhagic Shock[2]. It is quite clear that dengue had been invaded and ruined most of the world's equatorial population for more than a half century[3]. Dengue virus (DENV) being a member of flaviviridea virus family, have envelope and four serotypes; (DENV-1, DENV-2, DENV-3, and DENV-4)[4]. There is no any definite treatment protocol exists now-a-days against Dengue fever and management is only possible through supportive care of the disease state[5].

Dengue has been classified as one of the dangerous blood infections and pathogenesis of the disease initiates when the body

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commences to react against the Dengue virus which results in acute viral attack. It presents with lymphocytosis with a characteristic response of lymphocytes due to motivation of these blood cells. Furthermore, the trouble and disturbances in normal hemostasis is an additional significant proceeding of the Dengue Infection. Moreover, thrombocytopenia and bleeding are the most critical consequences which arises due to destruction of platelets and vascular leakage[6]. Thrombocytopenia basically originates through the immune-mediated mechanism[7-8], which results in auto-destruction of platelets by IgM and it occurs when the immune mediated operation between the virus and the platelets takes places which as an outcome results in complete devastation of platelet[9-12]. Thus, the damage to the platelets is usually self-limited after the acute phase of Dengue fever. An incubation period of 5-8 days which is followed by the episodes of high grade fever along with headache, malaise and

myalgia is a typical picture of the infection as well as emergence of rashes takes place which is very usual after 3-4 days.

For the explicit diagnosis of the Dengue infection, tests based on immunology such as IgM and IgG ELISA, techniques involving suppression of hemagglutination and neutralization proves to be indispensable while the test which serves as a basic tool to screen the virus is Tourniquet tests the dangerous virus of dengue is currently a questionable health issue worldwide. The diagnosis of the infection through latest methodologies involving molecules, has developed a modern optimism for primitive diagnosis, yet even very restricted because of the financial issues and the problems handling the standardisations. In general, using supportive and symptomatic management is extensively utilized for treating the dengue fever, to stop the lethal consequences of the infective disease[13]. Possibilities for treating the infection caused by dengue virus by using anti-viral therapies is even not fully explored and need to be dig up.

The naturally occurring medicines have anti-viral, mosquitocidal, larvicidal effects against *Aedes aegypti*. The following are the plant sources reported to have antivirals, mosquitocidals, larvicidals and mosquito repellents activities[14].

Papaya Leaves in Dengue Fever:

The consumption of leaves of papaya tree due to their existing congenital effects in the therapy of dengue infection has been widely accepted and a matter of great concern for the health of population. The leaves of papaya (*Carica papaya*) decoction accounts quite effective for their curative properties due to the presence of several potent constituents like Papain, L-tocopherol, glucosides which are cyanogenic in nature along with glucosinolates as well as flavonoids, cystatin, chymopapain and ascorbic acid. Such agents act against free radicals

which is linked with diminished formation of peroxides of the fat content, thus reveals its effects in inhibition of excrescence and tumour growths as well as immune modulatory actions[15] and may cause increased platelet and red blood cell counts[16]. The leaf juice of papaya improved the health of patients by increasing the number of platelets[17].

Baikal skullcap (Scutellaria baicalensis):

An unprecedented effects against all four serotypes of dengue virus in-vitro has been exposed in the aqueous and cold extract of *S.baicalensis* roots. It has also been found that the extract particularly aimed to effect at several distinct phases of infection caused by dengue virus as well as inhibit virus duplication. The strong straight effects of *S.baicalensis* extract against the virus which act as a crucial point for anti-dengue therapy improvement because this may also obliterate the virus existing in patient's blood stream. The capability of plant extract *S.baicalensis* in practice having anti-viral effects and the occurrence of a flavinoid; Baicalein which possesses inhibitory effects against the dengue virus replication feasibly shown to have ingredients which are adequate enough to show natural anti-viral activity[18].

Japanese orchid (Gastrodia elata):

Gastrodia elata has an inhibitory potential and has recognized the antiviral potential against dengue virus serotype 2 *in vitro* by means of BHK cell line (Baby Hamster kidney fibroblast cells). The ineffectiveness of WSS45 after entering the susceptible cell powerfully suggests that it is a virus entry inhibitor[19].

Irish moss/carrageen moss:

Chondrus crispus (Irish moss, Red seaweeds) belonging to the Family Gigartinaceae is an industrial source of carrageenan. Carrageenans belong to class of natural polysaccharides. Red seaweeds are known to be carrageenophytes, producing kappa, iota and lambda carrageenans which have been reported with effective

antiviral effect[20].

Chinese Ginger:

Chinese ginger is the local designation of *Boesenbergia rotunda*. NS2B is a membrane associated protein used to anchor and regulate the replication compound during viral life cycle. NS2B-NS3 is a serine protease necessary for the processing of polyprotein essential for virus replication, effect of groups of falvanones plus their chalcones against protease of DENV-2[21-24].

Small-egg plant:

Oldenlandia affinis (Small-eggplant) belongs to the Rubiaceae family, contains Cyclotides, able to inhibit dengue viral NS2B-NS3 protease. This inhibition is substrate precise and competitive in nature[25].

Black galangale or Chandramul:

Borneol is a chemical constituent of *Kaempferia parviflora*, a member of plant family Zingiberaceae. The parts of stem and leaves of chandramul have been utilized in contrast to virus. Studies demonstrate that several medicinal amalgams which show bioactivity in *K. parviflora* have capability to directly make ineffective the serotype of dengue virus; DENV-2. A dose dependent activity has been shown by some bioactive compounds in *K parviflora*[26]. The plant extract is also effectively used as a mosquito repellent[27].

Mazu phal:

Quercus lusitanica or *Quercus infectoria* (Mazu Phal), contain gallic acid and ellagic acid. An estimation has been made on the antiviral effects by the reduction of the cytopathic effect (CPE) of DENV-2 in C6/36 cells along with the deduction in virus titre. At concentration of 180µg/ml crude methanol extract of *Quercus lusitanica* stood establish overall hinder infection caused by dengue virus and ultimately inhibit the virus replication by the extract

of the plant and it shows a dose dependent inhibition[28].

Pippli

Piper longum, family Piperaceae, is commonly named as Papal or Pippli. Piperine is an active constituent of *Piper longum*. In a study, ethanolic extracts of *Piper longum*, *Piper ribesoides* and *Piper sarmentosum* were explored for action against *Aedes aegypti*. These species showed their efficacy in following order: *Piper longum* > *Piper sarmentosum* > *Piper ribesoides*[29].

Kari patah

Kari patah or Kariapat is the whole of *Murraya koenigii* family Rutaceae. An extract of acetone and petroleum along with ether extracts of *Murraya koenigii* having concentration range 250-900 ppm shows Larvicidal activity against *Aedes aegypti*[30].

Mentigi

Pemphis acidula (local name, Mentigi) belonging to family Lythraceae. Crude leaf extracts of *Pemphis acidula* show larvicidal, ovicidal and repellent accomplishments in contradiction of *Aedes aegypti*[31].

Anisuan

Pimpinella anisum is commonly known as Anisuan, member of the family Apiaceae. From the entire plant essential oil has been extracted having constituents like methylchavicol, cis-anethole, α-terpineol, linalool, p-anisaldehyde and trans-anethole which has shown to possess mutagenic activity and extremely lethal to *Aedes aegypti* larvae[32].

Turmeric

Zingiberaceae, a member of ginger family having a herbaceous, rhizomatous plant; *Curcuma longa* which gives volatile oil named Turmerone[33]. It Shows complete mosquitocidal effectiveness in contradiction of *Aedes aegypti*[34].

Kaatu/Dentate clausena

The plant *Clausena dentata* belongs to the Rutaceae family. Essential oil obtained by steam distillation of leaves of *Clausena dentata* are capable as repellent in contradiction of *Aedes aegypti*. The concentrations of essential oil is directly proportional to the mean time duration for protection with the *Aedes aegypti* alongside the biting is deprived of irritation to human skin. Thus repellents for the control of dengue fever would be substituted by the plant base repellents from formerly synthetic repellent having adverse effects[35].

Pinwheel jasmine/crepe jasmine

Ervatamia coronaria leaves (Pinwheel Jasmine/Crepe Jasmine) belonging to family Apocynaceae are used as natural remedy to safeguard the mosquito bite[36].

Peacock flower

Fabaceae having a member known as *Caesalpinia pulcherrima* which is a species of flowering plant, the extract of this plant leaves along with crude benzene and ethyl acetate are used as repungent for *Aedes aegypti*[37].

Citronella grass

Andropogon citratus belongs to the family Poaceae. Citronella oil which is an essential oil is a main ingredient of this plant used in candles and lanterns to burn to drive back mosquitoes, so it is used as a fumigant. Its mosquito repellent qualities have been verified by investigation, together with efficiency in repelling *Aedes aegypti*[38].

Laung/clove

Syzygium aromaticum belongs to family Myrtaceae. Essential oil of this plant is used as insect repellents including *Aedes aegypti*. Less than 25% concentration must be used to elude some adverse effect e.g. hypersensitivity[39].

Barley Grass:

Production of blood cells stimulates by Barley grass, which increase the blood platelets count significantly. It is used as barley tea and can be eaten directly as barely grass. Moreover for an enhanced platelet count, a supplementary thoughtful adverse effect which not only extends body's debilities but also leads to dengue hemorrhagic fever plus supplementary worst obstacles.

Goldenseal:

For the purpose of eradication of the dengue virus outside the body and to relief the troublesome aspects of the disease, Goldenseal has been admired by the medics. In the shortest span of time, the infection caused by the dengue virus rectified and the symptoms such as cold fever, nausea along with vomiting, headache can be counteract by the Goldenseal.

Water:

Life-threatening desiccation, extreme perspiration, generalized body exertion and all other debilitating effects are produced by dengue fever on the body. For making body well-hydrated, plenty of water intake has always been recommended and it would be helpful comforting warning signs such as muscle pains, headache which in turn directly effects hydration status of the body.

Papaya Leaves:

In the infectious condition caused by dengue virus, the leaves of papaya have been extensively accepted as pure therapy and utilized broadly. Papaya contains a mixture of nutritive compounds plus elements which are organic in nature having power to increase the platelets in the blood as well as appreciable contents of vitamin C also enhances the immunity and the anti-oxidants aids to decrease the stress by inhibiting oxidation and remove additional contaminants residing in the body. After crushing and straining the plant leaves through a piece of cloth, the natural liquor can be

achieved and consumed.

Neem Leaves:

Frequently given for various sicknesses and in infection caused by dengue virus is out of the question. Using the leaves of neem tree along with consuming it as formerly consequent beverage has linked with proliferation of blood cells; platelets and WBCs, which are among major and most lethal target for the virus of dengue infection.

Orange Juice:

Orange juices contain gorgeous fusion made up of anti-oxidants plus vitamins for the purpose of curing indicators of the infection by the virus of dengue along with the removal of the diseased virus. It promotes discharge of the toxic material, enhance urinary flow, boost the immunity, also activate the mechanism of cell repairing because of the functioning of vitamin C in establishment of the fibrous proteins; collagen.

Basil:

A vital practice to raise immune system is chewing of basil leaves, though it sounds not palatable and in Ayurvedic system of medication this method of treating the infection of dengue has been endorsed from long time.

Fenugreek:

Leaves of the plant are known to decrease temperature as well as serves as a calming agent in reducing pain and aiding in proper sleep and rest[40].

Methodology:

A review of the literature published in scientific journals, books thesis and reports.

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