

## Herbal treatment of Dengue Fever

Muhammad Akram<sup>1</sup>, Abid Rashid<sup>2</sup>, Umme Laila<sup>1</sup>, Muhammad Talha Khalil<sup>1</sup>, Aisha Rassul Ashad<sup>1</sup>, Rida Zainab<sup>1</sup>, Gawel Sołowski<sup>3</sup>

<sup>1</sup>Department of Eastern Medicine, Government College University Faisalabad-Pakistan

<sup>2</sup>Faculty of Medical Sciences, Government College University Faisalabad-Pakistan

<sup>3</sup>Department of Molecular Biology and Genetics, Faculty of Science and Art, Bingol University, Bingol, 1200, Turkey

**Abstract:** Dengue fever is a disease that is caused by the bites of a mosquito (*Aedes aegypti*) which belongs to the family of *Flaviviridae* which consists of four serotypes. In the dengue fever, the patient has a fever of 40 °C (104 °F). The disease of dengue fever ranges from asymptomatic to the level of symptomatic hemorrhage and shock. The patient of dengue fever suffers from hemorrhagic dengue fever. In the case of dengue fever, the platelets count decreases from the normal level causing leucopenia. There is no proper treatment for dengue fever but some herbal medicines are used to increase the number of platelets in a person to treat dengue fever. Mostly papaya leaves are the best herbal remedy that can be applied in the treatment of dengue fever.

**Key words:** mosquito bite leukopenia, high-grade fever, papaya leaves.

### Introduction:

The virus is the most common cause of dengue fever so it is also mentioned as an infectious disease. The female mosquito (*Aedes aegypti*) is the main cause of the transfer of the virus. This mosquito mostly bites during the daytime to humans. This virus belongs to the family of viruses *Flaviviridae* family which mostly causes infections in humans(1). In the past few years, dengue fever causes an alarming proportion worldwide as it affects many people(2). As compared to malaria dengue fever is causing more damage in terms of morbidity and mortality(3). Dengue fever is also called 'Break bone fever' because in some cases patients have severe pain this illness occurs in that patient who has a viral disease of family hemorrhagic fever. This disease can be transferred by placental transfusions during conception or by blood transfusions from one person to another(4).



**Corresponding Author:** Muhammad Akram

Department of Eastern Medicine, Government College  
University Faisalabad-Pakistan

Mail: Makram\_0451@hotmail.com

Dengue fever is the most common infection-causing disease that is transferred by mosquitos. This illness causes severe flu, joint pain, malaise, weakness, and fever of 40 °C or 104 °F(1).

#### **Mechanism:**

In the human body only in macrophages, the virus of dengue fever replicates and causes hemorrhagic fever infection. When the virus-antibody reactions occur then it promotes viral cell infection which causes hemorrhagic viral replication. This appear due to protease-sensitive receptor or via the specific macrophage receptor the Fc portion of an antibody molecule. At the outer envelope of the virus, the antibody gets attached and then send signals to the macrophages. After that when a macrophage responds to the signal then they reach the virus site and engulf it. The virus in macrophages after engulfment take control of the macrophages and starts replicating. So, by macrophages transport, the virus is transferred to the whole body of the person(5).

#### **In dengue fever the mechanism of thrombocytopenia:**

When thrombolytic count of  $<100,000$  cells/mm<sup>3</sup> then it is mentioned as hemorrhagic fever of dengue(6). There are mainly two mechanisms can be responsible for thrombocytopenia of dengue fever which is peripheral platelet destruction and other is impaired thrombopoiesis.

The peripheral platelet destruction occurs by DENV which causes increased thrombocytopenia. The DENV causes the destruction of platelets by producing antibodies and it is an autoimmune disorder. The destruction of platelets occurs when their reaction increases with the leucocytes and lining of an endothelial cell. So, this platelet aggression is responsible for the destruction of platelets.

While in thrombopoiesis is at the onset of infection the megakaryopoiesis is reduced which is at a normal level in clinical recovery. This effect is mostly produced due to the effect on megakaryocytic by the virus or by the stromal cell which causes the release of cytokines (7).

#### **Spread:**

Dengue fever occurs due to mosquito bites same as malaria fever. The Aedes mosquito is a very bold mosquito because it mostly bites the person during the daytime. The virus of dengue is present in the blood of a person who is having dengue fever. So, when a mosquito bites a person and sucks his blood then due to sucking the virus enters the body of the mosquito and the virus completes its life cycle there and starts replicating. Now when that mosquito bites a normal healthy individual then the virus injects in the person's body and he becomes infected by dengue fever and symptoms occurs in person. The dengue virus mostly spread during the rainy seasons like July to October(8,9).

**Clinical disease:**

In mosquitos, the incubation period is followed by 8-12 days while additionally in human beings it is 13-14 days. While the clinical disease is followed by 3-7 days. The virus is delivered to the offspring of the female mosquitos and that mosquito remains infectious throughout the life period. The dengue fever disease range from asymptomatic to severely symptomatic and the patient become severely ill and causing hemorrhage and shock. Case definitions are:

**In asymptomatic case:**

In the asymptomatic case, the patient is usually showing no symptoms except fever..

**Dengue fever:**

- The patient has high grade fever and leukopenia.
- The patient has ocular pain or retro-orbital pain.
- The patient who is suffering from dengue fever also has joint pain with fever.
- The person also suffers from arthralgia and myalgia.
- The patient also suffers from headaches and rash.
- The patient also has hemorrhagic symptoms but they do not meet the criteria of hemorrhagic dengue fever.
- The patient has extreme weakness, nausea vomiting, and loss of appetite.
- The patient also has a change in the taste sensation.
- The patient who has dengue fever also has pain in the throat and abdomen.

**Dengue hemorrhagic fever:**

- In dengue hemorrhagic fever the patient suffers from thrombocytopenia in which the platelets count decreases then 100,000 cells per mm<sup>2</sup>.
- If there is pleural effusion, hypo-proteinemia, ascites or hemoconcentration (in which the decrease of <20% after rehydration or >20% increase in hematocrit of normal for age) are manifested for plasma leakage.

**Shock syndrome dengue:**

- The dengue shock syndrome meets the criteria of dengue hemorrhagic fever.
- The patient also shows signs of shock like rapid pulse, poor end-organ perfusion, and narrow pulse pressure (10).

**Treatment:****Papaya leaves:**

the papaya leaves are very helpful in the treatment of dengue fever. These leaves are helpful in treating fever, joint pain, malaise, and flu-like symptoms of patients.

Biological source: *Carica papaya*

Family: *Caricaceae*

The papaya leaves are very helpful in treating colon problems or digestion problems. The papaya leaves are also helpful in treating stomach ulcers. The papaya leaves also work as anti-inflammatory agents because they release amylase and cytokines. Due to their anti-inflammatory action, they also release the inflammation of the colon.

The papaya leaves have chemical constituents of ascorbic acid, flavins, papain, cystatin, glucosinolates, and cyanogenic glucosidase(11).

#### **Fenugreek:**

The fenugreek leaves are very helpful in reducing the fever and pain of the patient. The fenugreek leaves use cause more restful sleep to the patient during fever. The use of fenugreek leaves is done by soaking them in water and then using it.

Biological source: *Trigonella foenum-graecum*

Family: *Fabaceae*

Fenugreek is also very helpful in treating digestive problems.

#### **Golden seal:**

The dried root of a golden seal is used in medicines. The golden seal is used in the treatment of dengue fever because it eliminates the virus from the body.

Biological source: *Hydrastis canadensis*

#### **Family: Ranunculaceae**

The golden seal uses in the treatment of gastritis, stuffy nose, high fever, ulcers, and constipation.

And the golden seal has chemical constituents of quinolones and alkaloids such as berberine, canadines, and hydrastines.

#### **Kiwi fruit:**

Kiwi fruit is very helpful in the treatment of dengue fever as the fruit or juice of kiwi fruit is good. The kiwi fruit increases the platelets count.

Biological source : *Actinidia deliciosa*

Family: *Actinidiaceae*

The kiwi fruit is used as a source of fiber, in treatment of dengue fever and for digestion and asthma.

The kiwi fruit has chemical constituents of serotonin and potassium, lutein, zeaxanthin, and vitamins C and E(12).

#### **Neem:**

The common name of neem is Margosa. The purifying agents such as neem oil or neem leaves are applied on the moist cloth between the dosage of 15-60 grams 2-3 times daily. But the use of neem leaves is restricted in those females and males with infertility problems.

Biological source: *Azadirachta indica*

Family: *Meliaceae*

The person who is suffering from dengue fever should drink plenty of water and should avoid solid food until the fever is gone (13,14).

#### **Coriander:**

From the fully ripped plant of coriander, the coriander fruit is obtained. As a tonic, coriander leaves are very useful to reduce the degree of dengue fever.

Botanical source: *Coriandrum sativum* Linn

Family: *Umbelliferae*

A product of coriander which is named Kakamachi is used as a cooling drink or soothing drink which is helpful for releasing harmful toxins from the body which are harmful to the digestive system during the attack of dengue fever. The recommended dosage of this syrup is a cup twice regularly. (13,14).

#### **Tulsi:**

The common name of tulsi is Holy Basil. The tulsi leaves are boiled in warm water and they are given to the patient in the form of tea to treat the dengue fever. The volatile oil is also obtained from the tulsi leaves.

Botanical source: *Ocimum sanctum* Linn

Family: *Labiatae*

It is suggested that the fifteen basil leaves are chewed daily or they should boil in 200ml of water and drink 2-3 times daily. This therapy is used to strengthen the immune system.

There should be a proportion of one black pepper and ten pieces of tulsi leaves. Then make small size pills after grinding pepper and tulsi leaves. And suggest is to use with water. (15).

#### **Conclusion:**

Dengue fever is the most common cause of morbidity and mortality worldwide. As many people died annually due to the virus transmission and complications of dengue fever. So, there is a need to treat dengue fever with alternative methods of treatment. As we can use natural herbs to treat dengue fever. The papaya leaves, fenugreek, tulsi, goldenseal, and coriander all are very helpful in the home remedy for dengue fever.

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