



Medicinal Plants Effective Against Dengue Fever in India: A Brief Review

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ABSTRACT

Dengue fever is a viral disease transmitted by *Aedes* mosquitoes. It is widespread in tropical and subtropical regions and can cause severe health complications, especially in severe cases. Although there is no specific treatment for dengue fever, the use of medicinal plants as a complementary approach to managing the symptoms of this disease is on the rise. This article reviews several medicinal plants effective against dengue fever. In India, medicinal plants such as peppermint, turmeric, black elderberry, green tea, ginger, aloe vera, sage, chamomile, cinnamon, and milk thistle are used to treat dengue fever.

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Introduction

Dengue fever, also known as "breakbone fever," is caused by the dengue virus and transmitted through the bite of *Aedes* mosquitoes. Early symptoms include high fever, severe muscle and joint pain, intense headache, and skin rashes. In more severe cases, the patient may experience serious complications such as bleeding, low blood pressure, and shock. Treatment for dengue fever is primarily supportive, including adequate fluid intake and pain relievers to reduce fever and discomfort. In acute cases, hospitalization and close monitoring of the patient's condition may be necessary. Preventive

measures, such as wearing appropriate clothing and using insect repellent, can be highly effective. The sesquiterpenes from essential oils of different plant extracts show a varied range of anti-inflammatory and antiviral activity (Mandal et al., 2020; Das et al., 2022). An alteration in the oxidation/reduction (redox) status of humans infected with virus infections may contribute to the pathogenesis and clinical manifestations of the disease. Alterations in redox markers begin prior to the onset of clinical symptoms, suggesting early changes in the oxidant/antioxidant balance. *Falcaria vulgaris* has good antioxidant activity which can be clinically

useful in the management of patients with dengue virus infection (Shahsavari et al., 2022). Agaricus bisporus, with its anti-inflammatory, antioxidant, and analgesic activity, can show an effective result in the treatment of dengue fever (Bose et al., 2019). Clove and coriander have antimicrobial activity which can be effective in the treatment of dengue fever (Ganguly et al., 2023). This brief review aims to identify medicinal plants used in India to treat dengue fever (Carroll et al., 2007).

Different Types of Plants Used to Treat Dengue Fever

Peppermint (*Mentha piperita*)

Peppermint, scientifically known as *Mentha piperita*, is renowned for its soothing and anti-inflammatory properties (Ansari et al., 2000). The primary active compound, menthol, helps reduce fever and alleviate pain (Aljameeli, 2023). Menthol works as a cooling and calming agent, aiding in the reduction of heat and discomfort in the body. Studies have shown that peppermint can improve dengue fever symptoms (Aljameeli, 2023).

Turmeric (*Curcuma longa*)

Turmeric, with its active compound curcumin, is well-known for its powerful anti-inflammatory and antioxidant properties, which can help reduce inflammation and improve the condition of patients with dengue fever (Ichsyani et al., 2017). Curcumin works by inhibiting inflammatory pathways and the release of pro-inflammatory cytokines (Sukari et al., 2010). Research indicates that curcumin can boost the immune system and alleviate dengue fever symptoms (Panghiyangani et al., 2012).

Black Elderberry (*Sambucus nigra*)

Black elderberry, or *Sambucus nigra*, is recognized for its antiviral and immune-boosting properties (Mahboubi, 2021). The primary active compounds, anthocyanins, can help mitigate the effects of dengue fever. These compounds inhibit viral replication and enhance immune response (Akwayamai et al., n.d.). Studies suggest that black elderberry extract can shorten the duration of the illness in dengue patients (Journey et al., n.d.).

Green Tea (*Camellia sinensis*)

Green tea, scientifically known as *Camellia sinensis*, is valued for its catechins and antioxidant properties (Xu et al., 2017). These compounds strengthen the immune system and reduce inflammation in dengue patients (Mahajan et al., 2020). Catechins work by inhibiting viral replication and reducing inflammatory responses. Research has found that consuming green tea can lower fever and improve patient outcomes (Raekiansyah et al., 2018).

Ginger (*Zingiber officinale*)

Ginger, or *Zingiber officinale*, is an effective medicinal plant known for its anti-inflammatory and

pain-relieving properties (Kaushik et al., 2020). The primary active compound, gingerol, helps reduce fever and pain associated with dengue fever (Qadir et al., 2015). Ginger works by inhibiting inflammatory pathways and reducing prostaglandin release. Studies have shown that ginger extract can help alleviate symptoms of the disease (Boekoesoe & Ahmad, 2022).

Aloe Vera (*Aloe barbadensis miller*)

Aloe vera, scientifically known as *Aloe barbadensis miller*, is recognized for its anti-inflammatory and soothing properties (Gupta et al., 2014). The plant contains active compounds like aloins and polysaccharides, which help reduce fever and inflammation in dengue patients (Wahyuni et al., 2019). Aloe vera's mechanism involves anti-inflammatory effects and immune system support. Research has shown that aloe vera can relieve disease symptoms (Subramaniam et al., 2012).

Sage (*Salvia officinalis*)

Sage, or *Salvia officinalis*, is known for its anti-inflammatory and soothing properties. The primary active compound, carnosic acid, helps improve the condition of patients with dengue fever (Noisakran & Perng, 2008). Carnosic acid, as a potent antioxidant and anti-inflammatory agent, helps reduce inflammation and enhance the immune system (Miranda et al., 2013). Studies have shown that sage can reduce fever and relieve pain (Suganthan et al., 2020).

Chamomile (*Matricaria chamomilla*)

Chamomile tea, derived from *Matricaria chamomilla*, is appreciated for its calming and anti-inflammatory effects (Chansang et al., 2018). The primary active compound, azulene, helps reduce inflammation and alleviate dengue fever symptoms (Chaiphongpachara et al., 2020). Azulene works by reducing inflammation and soothing pain. Research indicates that chamomile tea can reduce fever and improve sleep (Noisakran & Perng, 2008).

Cinnamon (*Cinnamomum verum*)

Cinnamon, scientifically known as *Cinnamomum verum*, is well-known for its anti-inflammatory and antioxidant properties (Chansang et al., 2018). The primary active compound, cinnamaldehyde, helps reduce fever and inflammation. Cinnamaldehyde works by inhibiting inflammatory proteins and reducing the production of pro-inflammatory cytokines (Chaiphongpachara et al., 2020). A study found that cinnamon can be effective as a complementary treatment in reducing dengue fever symptoms (Thomas et al., 2017).

Milk Thistle (*Silybum marianum*)

Milk thistle, or *Silybum marianum*, is recognized for its antioxidant and anti-inflammatory properties (Low et al., 2021). The primary active compound,

silymarin, helps strengthen the immune system and reduce inflammation (Wangkheirakpam, 2018). Silymarin's mechanism involves reducing oxidative stress and inflammation. Studies have shown that milk thistle can improve the condition of patients with dengue fever (Qaddir et al., n.d.).

Clove (*Syzygium aromaticum*)

Clove is well known for its anti-inflammatory activity and also has antimicrobial activity. The active constituent eugenol helps to reduce inflammation. Because of eugenol's well-known anti-inflammatory and antioxidant qualities, the body may experience less oxidative stress and inflammation (Low et al., 2021).

Conclusion

Using medicinal plants as complementary treatments in managing dengue fever can positively impact symptom control and improve patient health. Plants such as peppermint, turmeric, black elderberry, green tea, ginger, aloe vera, sage, chamomile, cinnamon, and milk thistle each offer medicinal properties and mechanisms that help reduce fever and improve the condition of dengue fever patients. However, patients should consult their physician before using any herbal treatments to avoid potential interactions with other medications.

Declarations

Conflict of interest

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Authors' contributions

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All ethical issues, including plagiarism, misconduct, data fabrication, falsification, double publication, or submission redundancy, have been fully observed.

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