



Case Series

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THERAPEUTIC POTENTIAL OF YASHTIMADHU (*GLYCYRRHIZA GLABRA* L.) AND GUDUCHI (*TINOSPORA CORDIFOLIA* WILLD. MIERS) IN THE MANAGEMENT OF HAND, FOOT, AND MOUTH DISEASE: A CASE SERIES

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ABSTRACT

Background: Hand, Foot, and Mouth Disease (HFMD) is a highly contagious viral infection, primarily affecting children, characterized by fever, painful oral ulcers, and skin rashes. Conventional management focuses on symptomatic relief, with no specific antiviral treatment. Ayurveda, with its holistic approach, offers promising alternatives for managing HFMD through immune-boosting and healing interventions. Objective: This study aims to evaluate the efficacy of Yashtimadhu (*Glycyrrhiza glabra* L.) and Guduchi (*Tinospora cordifolia* Willd. Miers) in accelerating recovery and alleviating symptoms of HFMD. Materials and Methods: Two pediatric cases diagnosed clinically with Hand, Foot and Mouth Disease (HFMD) were managed in the Kayachikitsa OPD of Hillside Ayurveda Medical College and Hospital, Saldoddi, Agara village, Kanakapura main road, Bengaluru-560082. The treatment protocol consisted of Guduchi (*Tinospora cordifolia* Willd. Miers) - administered internally and Yashtimadhu (*Glycyrrhiza glabra* L.) - applied topically for oral ulcers. Additionally, Kumari pulp (*Aloe vera* L.) was used externally for skin lesions in one of the cases. The treatment was given for three days, and outcomes were assessed based on symptom relief, lesion healing, and overall recovery time. Results: Early intervention with Ayurveda treatment led to rapid symptomatic relief, prevention of lesion progression, and faster healing of ulcers and rashes. In both cases, oral discomfort significantly reduced within the first dose, and drying of lesion was observed by the second day of treatment. Additionally, the children resumed normal feeding and daily activities earlier than expected, suggesting an accelerated recovery. Conclusion: The findings suggest that Guduchi and Yashtimadhu can serve as effective therapeutic options for HFMD management, addressing both the infection and associated symptoms. Their antiviral, immunomodulatory, and wound-healing properties contribute to faster recovery and improved patient outcomes. While further clinical studies are required, this study highlights the potential of Ayurveda as a primary treatment approach in HFMD.

Keywords: Hand Foot Mouth Disease, Vesicular rash, Herpangina, Yashtimadhu choorna, Guduchi swarasa, Guduchi sattva.

INTRODUCTION

Hand, Foot, and Mouth Disease (HFMD) is a common, mild, and self-limiting viral infection that primarily affects children under the age of five. However, it can also occur in adolescents and, occasionally, in adults¹. While HFMD is generally not severe, it is highly contagious and spreads through direct contact with respiratory droplets (from sneezing, coughing, or talking), nasal and throat secretions, fluid from blisters, and the fecal matter of an infected individual².

HFMD is caused by enteroviruses, most commonly Coxsackievirus A16 and, in some cases, Enterovirus 71³. The infection typically presents with fever (often the first symptom), sore throat, painful mouth ulcers, and a skin rash on the hands, feet, buttocks, and sometimes other parts of the body, along with irritability and loss of appetite in young children⁴.

Though the disease usually resolves on its own within 7–10 days, complications—though rare—can include neurological manifestations such as viral meningitis or encephalitis. Severe cases may require hospitalization due to dehydration, as painful oral blisters can make it difficult for children to eat and drink⁵.

In India, a recent surge in HFMD cases has been observed, particularly during the monsoon season. The warm and humid climate facilitates viral transmission, contributing to outbreaks in schools and daycare centers.

Currently, there is no specific antiviral treatment for HFMD. The Centers for Disease Control and Prevention (CDC) recommends only supportive care, which includes fever and pain management, hydration therapy to prevent dehydration, and topical treatments to relieve mouth ulcer discomfort¹.

In this context, Ayurveda offers a promising approach to accelerate lesion healing and restore health naturally. The present report highlights the swift recovery of a child from HFMD through Ayurvedic treatment, demonstrating its potential in reducing symptoms, promoting healing, and improving overall well-being in a short duration. The use of herbal formulations can aid in faster recovery, prevent complications, and enhance immunity, making it a valuable complementary approach in managing HFMD.

Aim: To evaluate the effectiveness of Yashtimadhu (*Glycyrrhiza glabra* L.) and Guduchi (*Tinospora cordifolia* Willd. Miers) in the management of Hand, Foot, and Mouth Disease (HFMD) by assessing their role in symptom relief, lesion healing, and overall recovery.

Objectives

- To assess the therapeutic potential of Yashtimadhu (*Glycyrrhiza glabra* L.) and Guduchi (*Tinospora cordifolia* Willd. Miers) in reducing fever, oral ulcers, and skin rashes in HFMD.

- To evaluate the role of Ayurvedic interventions in enhancing immunity and preventing complications associated with HFMD.
- To document a clinical case demonstrating the effectiveness of Ayurveda in the swift recovery of a child affected by HFMD.
- To highlight the holistic benefits of Ayurveda in improving overall health and well-being.

MATERIALS AND METHODS

Case 1: Ayurvedic management of HFMD in one-year-old child

Patient Information:

Age and Gender: 1-year-old male

Chief Complaints: Fever for three days, Refusal to feed, Excessive drooling of saliva and Skin rashes for the past two days.

Medical and Family History: No significant history of chronic illness or recent infections.

Consent: Informed written consent was obtained from the child's parents for publication.

Clinical Findings and Diagnosis

On Examination

- Multiple vesicular eruptions (~2 mm in diameter) on the face (around the lips), elbows, knees, palms, and soles.
- Red blisters inside the mouth, particularly on the palate, alveolar mucosa, pharyngeal opening, and tongue (approximately 1 mm, irregularly shaped, reddish).
- Swollen (edematous) lower lip.

Provisional Diagnosis: Hand, Foot, and Mouth Disease (HFMD), based on clinical presentation.

Conventional Findings and Diagnosis

Initially Treated With:

- Paracetamol syrup (3ml three times a day for three days)
- Calamine lotion (for external application)

Progression: By Day 4, the fever had subsided; however, no improvement was observed in the oral ulcers or skin lesions. The irritation worsened, and the child continued to refuse feeding.

Intervention

On Day 4, considering the persistent symptoms, Ayurvedic treatment was initiated as follows:

Table 1: Treatment schedule for 1-year male patient (Case 1)

| Medicine | Dose | Preparation /Anupana | Duration | Administration |
|------------------------------------|---------------------------------------|---|----------|--------------------------------|
| Guduchi swarasa ⁷⁻¹¹ | 2 ml | Freshly prepared | 3 days | Orally |
| Yastimadhu Choorna ⁹⁻¹¹ | A Pinch or 1/4 th teaspoon | Mixed with a sufficient quantity of honey | 3 days | Application to the oral cavity |
| Kumari pulp | Quantity sufficient | Fresh aloe vera pulp | 3 days | External application (E/A) |

After three days of this treatment, the patient returned for a follow-up visit. It was observed that the child's overall condition had improved — the child was able to feed, drooling of saliva had stopped, and the lesions had dried and begun to heal. Additionally, no new eruptions were noted.

Case 2: Early Ayurvedic intervention in a 2 year 6 months old child

Patient Information

Age and Gender: 2 years 6 months, male

Chief Complaints: Fever for three days, Refusal to feed (since 1 day), Excessive drooling of saliva, Disturbed sleep, irritability, and excessive crying.

Medical and Family History: No significant chronic illnesses.

Consent: Informed written consent was obtained from the parents.

Clinical Findings and Diagnosis

Oral Examination: Petechiae observed on the buccal mucosa, palate, tongue, and gums.

Skin findings: Petechiae on the left sole and right palm and Vesicular rash on the left leg, right thumb, and shoulder region.

Vital signs: Temperature 99.3°F at the time of the OPD visit.

Diagnosis: HFMD confirmed based on clinical features.

Ayurvedic Clinical Intervention from Day 1 of Diagnosis

Considering the early stage of the disease, Ayurvedic treatment was initiated as follows:

Table 2: Treatment schedule for 2 year 6 months male patient (Case 2)

| Medicine | Dose | Preparation /Anupana | Duration | Administration |
|------------------------------------|---------------------------------------|---|----------|--------------------------------|
| Guduchi sattva ⁷⁻¹¹ | 1/4th teaspoon | ---- | 3 days | Orally |
| Yastimadhu Choorna ⁹⁻¹¹ | A Pinch or 1/4 th teaspoon | Mixed with a sufficient quantity of honey | 3 days | Application to the oral cavity |

By Day 4 of follow-up, the child had achieved complete recovery, with no fever, oral discomfort, or new lesions. The skin rashes had dried and faded, and the child had resumed normal feeding and daily activities without any signs of irritability.

OBSERVATION AND RESULTS

Case 1: A patient diagnosed with HFMD was prescribed Ayurvedic treatment from the 4th day of disease manifestation for a duration of three days. The treatment included Guduchi swarasa (administered internally), Yashtimadhu choorna (applied to the oral cavity), and Kumari pulp (used externally for skin lesions).

Outcome

- After the first dose, the child resumed feeding, indicating a reduction in oral discomfort.
- By Day 2 of Ayurvedic treatment, the lesions had begun to

dry and heal, and irritation had noticeably reduced.

- By Day 3, the child showed significant improvement, had resumed normal daily activities, and no new eruptions were observed.

Case 2: A patient diagnosed with HFMD was prescribed Ayurvedic treatment from the first day of diagnosis for a duration of three days. The treatment protocol included Guduchi Sattva (*Tinospora cordifolia* (Willd.) Miers) - administered internally and Yashtimadhu Choorna (*Glycyrrhiza glabra* L.) - applied to the oral cavity.

Outcome

- Fever and irritability reduced within 24 hours of initiating treatment.
- By Day 2, the oral ulcers and skin rashes had begun to heal without further progression.

- Unlike Case 1, the lesions did not spread, suggesting that early Ayurvedic intervention may have helped contain the infection.
- No external application was required; however, parents were advised to apply Kumari pulp if irritation increased.
- By Day 3, the child exhibited complete recovery, with no new lesions or complications.

Table 3: Comparative Observations Before and After Ayurvedic Treatment

| Clinical Parameters | Case 1 – Before Treatment (Day 3) | Case 1 – After Treatment (Day 6) | Case 2 – Before Treatment | Case 2 – After Treatment (Day 3) |
|---|---|--|--|--|
| Fever | Present for past 3 days | Subsided; no fever | Present for 3 days | Completely relieved within 24 hours |
| Feeding Pattern | Refusal to feed; excessive drooling | Child resumed feeding normally | Refusal to feed; excessive crying; drooling | Normal feeding resumed |
| Oral Lesions | Multiple red vesicles on palate, tongue, alveolar mucosa; painful | Lesions dried; pain reduced; child feeding comfortably | Petechiae on buccal mucosa, palate, tongue, gums | Significant healing; no pain; ulcers resolved |
| Skin Lesions | Vesicular rash on face, elbows, knees, palms, soles | Lesions dried and healing; no new eruptions | Petechiae on palms, soles; vesicles on leg and thumb | Lesions dried; no further spread; healing observed |
| Irritability / Crying | High irritability; discomfort | Irritability reduced; child active | Irritability and disturbed sleep | Completely resolved; child active |
| Drooling of Saliva | Excessive | Stopped by Day 2 of intervention | Present | Stopped by Day 2 |
| Progression of Lesions | Continued progression until Day 4 | No new lesions after Day 1 of treatment | Early spread observed at baseline | Spread completely prevented after treatment initiation |
| External Application Requirement | Kumari pulp applied due to extensive lesions | Effective; lesions dried | Not required initially; advised only if irritation increased | Not required |
| Overall Recovery Time | Marked improvement by Day 3 | Complete recovery within 3 days | Rapid improvement by Day 2 | Complete recovery by Day 3 |
| General Activity | Reduced playfulness; fatigue | Normal play resumed | Child irritable, reduced activity | Playful and active |



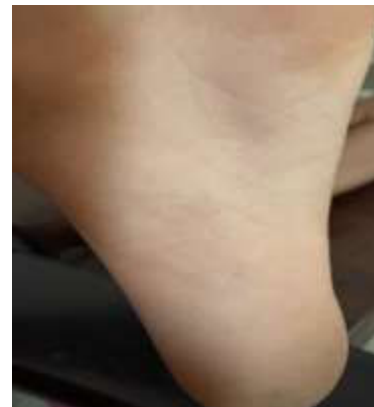
Case 1: Before Treatment



Case 1: After Treatment



Case 2: Before Treatment



Case 2: After Treatment

DISCUSSION

Hand, Foot, and Mouth Disease (HFMD) is a highly contagious viral infection that primarily affects children, with symptoms including fever, painful mouth ulcers, and skin rashes. While it is usually self-limiting, severe cases may require medical intervention due to complications like dehydration or, in rare instances, neurological manifestations. Conventional management primarily focuses on symptomatic relief, with no specific antiviral treatment available.

The present article highlights two case studies that demonstrate the beneficial outcomes of Ayurvedic interventions, specifically Guduchi (*Tinospora cordifolia* Willd. Miers), and Yashtimadhu (*Glycyrrhiza glabra* L.), in facilitating faster recovery and alleviating the symptomatic burden of HFMD. The observations from these cases indicate that early initiation of Ayurvedic treatment may play a crucial role in preventing the progression and spread of lesions. This was particularly evident in the second case, where treatment started on the first day of diagnosis and resulted in rapid improvement without further lesion development. Both cases also showed that Yashtimadhu Choorna (*Glycyrrhiza glabra* L.) contributed significantly to the restoration of normal feeding patterns by reducing oral discomfort and soothing mucosal inflammation, allowing the children to resume eating more comfortably. In addition, the drying and healing of rashes observed by the second day of treatment support the anti-inflammatory, wound-healing, and immunomodulatory properties of Guduchi (*Tinospora cordifolia* Willd. Miers), and Kumari (*Aloe vera* L.). Overall well-being improved steadily, with both children regaining energy and returning to daily activities more quickly than expected, considering that HFMD typically resolves over 7–10 days.

Ayurvedic Perspective

According to Ayurveda, Hand, Foot, and Mouth Disease (HFMD) is associated with an imbalance of Pitta and Kapha doshas (air and heat humor), leading to inflammation, fever, and blisters¹²⁻¹⁴. Guduchi (*Tinospora cordifolia* Willd. Miers), also known as Amrita, is highly regarded in Ayurveda for its immune-boosting, antipyretic, antiviral, and anti-inflammatory properties. It is recognized for its Rasayana (rejuvenative), Jwaraghna (antipyretic), and Vishaghna (detoxifying) properties, contributing to Tridosha balance. Guduchi (*Tinospora cordifolia* Willd. Miers), enhances immune function, helps combat viral infections, reduces fever and systemic inflammation, promotes skin healing (Vranaropaka), prevents lesion progression, detoxifies the body (Vishaghna), and mitigates post-viral fatigue through its Rasayana (rejuvenative) action¹⁵.

Yashtimadhu (*Glycyrrhiza glabra* L.), commonly known as Licorice, is a Pitta heat humor pacifying herb with mucosal-healing, anti-inflammatory, and soothing properties. It effectively soothes oral ulcers, alleviates pain and supports tissue healing (Shothahara and Vranaropaka), protects the mucosal lining, and enhances respiratory health by reducing cough and throat irritation. Additionally, its Rasayana (rejuvenative) properties strengthen immunity and prevent recurrent infections¹⁶. Kumari (*Aloe vera* L.), known for its skin-regenerating and cooling effects, helps reduce irritation and promote faster healing of skin lesions¹⁷.

The combined action of Guduchi (*Tinospora cordifolia* Willd. Miers), Yashtimadhu (*Glycyrrhiza glabra* L.), and Kumari (*Aloe vera* L.) played a significant role in accelerating symptom resolution, reducing inflammation, and supporting overall recovery in both cases.

Choice of Guduchi Formulation and External Application

The selection of Guduchi (*Tinospora cordifolia* Willd. Miers) formulations in both cases was based on availability, yet both Guduchi sattva and Guduchi swarasa demonstrated comparable therapeutic outcomes. In the first case, fresh Guduchi swarasa was preferred due to immediate availability, whereas in the second case, fresh Guduchi (*Tinospora cordifolia* Willd. Miers), was not accessible for preparing Swarasa; therefore, Guduchi sattva was used as an alternative. The consistent improvement seen in both children suggests that form of Guduchi (*Tinospora cordifolia* Willd. Miers) can be effective in supporting immunity, reducing fever, and promoting lesion healing. External application of Kumari pulp (*Aloe vera* L.) was employed only in the first case due to the severity and extent of lesions, offering additional cooling and protective benefits. In the second case, where the lesions were mild and non-irritant, external application was not needed, although parents were advised to use Kumari pulp (*Aloe vera* L.) if irritation increased. This reflects the importance of individualized treatment planning in Ayurveda, where interventions are tailored according to the severity and presentation of symptoms.

Comparative Discussion of Case 1 and Case 2

Both cases demonstrated favorable outcomes with Ayurvedic management; however, a comparison highlights important differences influenced by the timing of intervention and the form of medicines used. In Case 1, improvement began within the first dose, evidenced by the child resuming feeding, whereas in Case 2, noticeable relief occurred within 24 hours, with a reduction in fever and irritability. Lesion healing in Case 1 began by the second day, while Case 2 showed no progression or spread of lesions at any point, suggesting that early initiation of treatment may have contributed to better containment of the infection. External application of Kumari pulp was required only in Case 1 due to the severity of cutaneous lesions, while in Case 2 it was not necessary and was advised only if irritation increased. Both children achieved complete recovery within three days; however, the child in Case 2 recovered faster relative to the disease onset because treatment began on the first day of diagnosis, unlike Case 1, where intervention commenced on the fourth day. The form of Guduchi (*Tinospora cordifolia* Willd. Miers), used differed between the cases: Case 1 received freshly extracted Guduchi Swarasa, while Case 2 was given Guduchi Sattva due to unavailability of the fresh drug, yet both forms demonstrated comparable therapeutic effectiveness.

Clinical Implications

These case studies highlight that early and targeted Ayurvedic intervention can help manage HFMD effectively by:

- Reducing symptom severity (fever, pain, oral ulcers, and rashes).
- Preventing lesion progression and spread (as seen in Case 2).
- Accelerating the healing process of oral and skin lesions.
- Improving overall immunity and recovery time.

CONCLUSION

This article underscores the therapeutic potential of Ayurveda in HFMD management, particularly through the use of Guduchi (*Tinospora cordifolia* (Willd.) Miers) and Yashtimadhu (*Glycyrrhiza glabra* L.). These herbs not only help in symptom relief but also enhance natural immunity, making them valuable in pediatric viral infections. By integrating Ayurvedic treatments with proper hygiene, hydration, and supportive care, HFMD recovery can be significantly improved.

Need for the Further Research

While larger clinical studies are needed, these findings suggest that Guduchi (*Tinospora cordifolia* Willd. Miers) and Yashtimadhu (*Glycyrrhiza glabra* L.) have the potential to be established as primary therapeutic options in the management of HFMD, offering faster recovery and significant symptomatic relief. Future studies should focus on standardizing dosage, assessing long-term immunity benefits, and comparing outcomes with conventional treatment.

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