

“Polyherbalchewable Tablets for Oral Ulcer Management: A Pharmaceutical and Herbal Medicine Review”

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Abstract

Oral ulcers are common inflammatory lesions of the oral mucosa that significantly impair quality of life by causing pain, difficulty in eating, speaking, and maintaining oral hygiene. Conventional therapies for oral ulcers, including topical corticosteroids and antiseptic formulations, often provide only symptomatic relief and are limited by short retention time, frequent dosing, and potential adverse effects. Traditional systems of medicine, particularly Ayurveda, describe oral ulcerative conditions under entities such as *Mukhapaka* and advocate the use of medicinal plants possessing anti-inflammatory, antimicrobial, wound-healing, and soothing properties.

Polyherbal formulations represent a fundamental principle of Ayurvedic therapeutics, wherein the synergistic interaction of multiple herbs enhances therapeutic efficacy and safety. Several medicinal plants, including *Aloe vera*, *Glycyrrhiza glabra* (Yashtimadhu), *Psidium guajava* (Guava), *Azadirachta indica* (Neem), *Piper betle* (Betel leaf), and *Acacia catechu* (Khadira), have been traditionally employed in oral care.

Chewable tablets offer a convenient and acceptable oral dosage form with distinct advantages for localized oral therapy, including prolonged mucosal contact, ease of administration without water, and improved patient compliance, particularly among pediatric and geriatric populations. This review critically examines the therapeutic potential of polyherbal chewable tablets for oral ulcer management by integrating traditional Ayurvedic concepts with modern pharmaceutical formulation and standardization approaches. Emphasis is placed on herb selection, polyherbal synergy, formulation strategies, quality evaluation parameters, and current research gaps. The review highlights the need for further experimental and clinical studies to establish the safety, efficacy, and translational potential of polyherbal chewable tablets as an effective integrative approach in oral ulcer therapy.

Keywords: Oral ulcers; Polyherbal formulation; Chewable tablets; Ayurveda; Mukhapaka; Oral drug delivery; Herbal medicine

I. INTRODUCTION

A mouth ulcer is a tiny, excruciating sore that appears on the tongue, inner cheeks, lips, or gums. It can be brought on by stress, trauma, malnutrition, or specific medical disorders and is typically white or yellow with a crimson border. (Kaur et al., 2019), (Galih Prasetyo et al., 2012).

Ulcerative lesions of the oral mucosa represent a frequently encountered inflammatory condition characterized by localized tissue damage, pain, burning sensation, difficulty in mastication, impaired speech, and challenges in maintaining oral hygiene. Conditions such as recurrent aphthous stomatitis and related oral ulcers affect a considerable proportion of the population and exert a substantial negative impact on quality of life. The development of oral ulcers is multifactorial in nature, with contributing factors including mechanical injury, nutritional inadequacies, psychological stress, microbial infections, immune disturbances, and hormonal variations, making their management clinically challenging (Chavan et al., 2025), (Reddy, 2012)

Current clinical management of oral ulcers predominantly involves the use of topical corticosteroids, antiseptic formulations, analgesic agents, and antimicrobial mouth rinses. While these therapies are effective in alleviating symptoms, their long-term utility is often compromised by rapid clearance from the oral cavity, dilution by saliva, the need for repeated application, unpleasant sensory characteristics, and the potential for adverse effects upon prolonged use. These shortcomings highlight the necessity for alternative therapeutic approaches that are locally acting, safe for repeated use, and capable of maintaining prolonged contact with the oral mucosa (Vrushabh Arun Chavan et al., 2025).

the Ayurvedic system of medicine, oral ulcerative conditions are described under the broad clinical entity of *Mukhapaka*. According to classical concepts, the pathogenesis of *Mukhapaka* primarily involves the vitiation of *Pitta* and *Rakta dosha*, often accompanied by *Vata* imbalance. Ayurvedic texts advocate the use of drugs possessing *Sheeta*, *Madhura*, *Tikta*, and *Kashaya rasa* along with *Shothahara*, *Ropana*, *Vedanasthapana*, and *Krimighna* properties for effective management. These therapeutic principles emphasize local treatment modalities and restoration of tissue homeostasis rather than mere suppression of symptoms (Sharma, 2018).

Polyherbal formulations form a core component of Ayurvedic therapeutics, wherein the combination of multiple medicinal plants is intended to produce synergistic therapeutic effects while reducing the likelihood of adverse reactions. From an integrative medicine standpoint, polyherbal combinations are particularly advantageous in managing oral ulcers, as they can simultaneously address inflammation, microbial burden, oxidative stress, and tissue regeneration—key pathological factors underlying ulcer formation. Medicinal plants such as *Aloe vera*, *Glycyrrhiza glabra*, *Psidium guajava*, *Azadirachta indica*, *Piper betle*, and *Acacia catechu* have been widely reported in traditional literature and modern scientific studies for their anti-inflammatory, antimicrobial, antioxidant, and wound-healing activities relevant to oral health (Kumar and Pandey, 2013; Kaur et al., 2019), (Moher et al., 2009).

The effective translation of traditional herbal knowledge into contemporary healthcare practice depends not only on the selection of appropriate medicinal plants but also on the development of suitable pharmaceutical dosage forms. In recent years, increasing attention has been directed toward integrating Ayurvedic formulations with modern drug delivery systems to enhance patient compliance and therapeutic efficacy. Chewable tablets have emerged as a promising oral dosage form due to their ease of administration without water, improved acceptability, and ability to prolong residence time within the oral cavity. Chewing facilitates intimate mixing of active constituents with saliva, thereby promoting localized drug action and potentially improving clinical outcomes in oral ulcer management (Rao and Anand, 2024), (Mankar et al., 2024)

In this context, the present review critically evaluates the potential of polyherbal chewable tablets as an integrative therapeutic strategy for the

management of oral ulcers. The review brings together Ayurvedic conceptual foundations and modern pharmaceutical formulation principles, with emphasis on medicinal plant selection, rationale for polyherbal synergy, formulation considerations, quality evaluation parameters, and available experimental evidence. By identifying existing limitations and research gaps, this review aims to support the evidence-based development and future clinical translation of patient-centric, integrative therapies for oral ulcer care (Patwardhan and Patwardhan, 2017).

Ayurvedic Perspective of Oral Ulcers (*Mukhapaka*)

Ayurvedic literature describes inflammatory and ulcerative disorders of the oral cavity under the clinical entity known as *Mukhapaka*. Classical treatises such as the *Charaka Samhita* and *Sushruta Samhita* characterize *Mukhapaka* as a condition affecting the oral mucosa, presenting with features including pain (*Vedana*), burning sensation (*Daha*), erythema (*Raga*), swelling (*Shotha*), and ulceration (*Vrana*). These manifestations show close correspondence with the clinical features of recurrent aphthous ulcers recognized in contemporary medicine.

Nidana (Etiological Factors)

According to Ayurvedic principles, *Mukhapaka* develops as a result of multiple causative factors (*Nidana*), including inappropriate dietary practices such as excessive consumption of *Amla* (sour), *Katu* (pungent), *Lavana* (salty), and *Ushna* (hot) foods, inadequate oral hygiene, mental stress, suppression of natural urges, and systemic factors like nutritional deficiencies. These etiological influences contribute to *Dosha* imbalance, predominantly aggravating *Pitta* and *Rakta*, which subsequently manifests as inflammatory pathology in the oral cavity (Kushwahet et al., 2024), (Chavan et al., 2024).

Dosha–Dushya–Srotas Involvement

Mukhapaka primarily arises from vitiation of *Pitta* *Dosha* with significant involvement of *Rakta* *Dhatu*, while *Vata* *Dosha* contributes to chronicity and recurrence. Aggravated *Pitta* manifests as burning sensation, erythema, and ulceration, whereas *Rakta* vitiation leads to tissue damage and delayed healing. The involvement of *Vata* accounts for pain, dryness, and recurrent episodes. *Rakta* is the principal *Dushya*, and the pathology affects *Raktavaha* and *Annavaha* *Srotas*, with the oral

cavity (Mukha) as the main site of manifestation. Samprapti (Pathogenesis)

The Samprapti of Mukhapaka originates from persistent exposure to etiological factors that impair Agni and disturb Dosha balance. Vitiated Pitta and Rakta localize in the oral mucosa due to Srotodushti, causing inflammation, mucosal breakdown, and ulcer formation. Continued nidana exposure or inadequate management results in recurrence and delayed healing, a process comparable to immune-mediated mucosal injury and impaired wound repair seen in recurrent aphthous stomatitis.

Chikitsa Siddhanta (Principles of Management)

The Ayurvedic management of *Mukhapaka* primarily focuses on *Shamana Chikitsa*, employing medicinal substances that pacify *Pitta* and *Rakta* while facilitating mucosal healing. Classical texts recommend drugs characterized by *Sheeta* (cooling), *Madhura* (sweet), *Tikta* (bitter), and *Kashaya* (astringent) rasa, along with therapeutic actions such as *Shothahara* (anti-inflammatory), *Ropana* (wound healing), *Vedanasthapana* (analgesic), and *Krimighna* (antimicrobial). Particular emphasis is placed on local therapeutic measures to ensure direct action at the site of pathology and prompt symptomatic relief (Patwardhan, et al. 2015).

Relevance to Integrative Oral Ulcer Management

The Ayurvedic conceptualization of *Mukha Paka* underscores the importance of addressing localized pathology in conjunction with underlying systemic imbalance. This holistic viewpoint offers a strong theoretical basis for integrating traditional herbal therapeutics with modern pharmaceutical delivery systems. Polyherbal formulations incorporating *Pitta-Rakta shamaka* and *Ropana* herbs can be strategically designed to provide targeted local action within the oral cavity while maintaining safety and patient acceptability. Such an integrative approach aligns with contemporary objectives of patient-centered and evidence-informed oral healthcare and supports the exploration of innovative delivery systems, including polyherbal chewable tablets, for oral ulcer management.

Rationale for Polyherbal Therapy in Ayurveda and Integrative Medicine

Polyherbal therapy represents a fundamental therapeutic strategy in Ayurveda, wherein multiple medicinal plants are deliberately combined to achieve enhanced efficacy, broader

therapeutic coverage, and improved safety compared to single-drug formulations. This approach is based on classical principles such as *Samyoga Guna* (therapeutic attributes arising from combination), *Yogavahi* (potentiation of drug action), and *Dosha-Dushya Prabhava*, which collectively support synergistic and balanced therapeutic outcomes. In inflammatory and ulcerative disorders like *Mukhapaka*, which involve multifactorial pathogenesis, polyherbal formulations are considered particularly advantageous.

Ayurvedic Basis of Polyherbal Synergy

According to Ayurvedic pharmacology (*Dravyaguna Vijnana*), no single herb can comprehensively address all aspects of complex diseases involving *Dosha* imbalance, tissue damage, microbial involvement, and delayed healing. Polyherbal combinations allow the integration of drugs with complementary *Rasa* (taste), *Guna* (qualities), *Virya* (potency), *Vipaka* (post-digestive effect), and *Prabhava* (specific action), resulting in a more holistic therapeutic response. In the context of *Mukhapaka*, where *Pitta* and *Rakta* vitiation predominate, the combination of *Sheeta*, *Madhura*, *Tikta*, and *Kashaya* rasa-dominant herbs is traditionally recommended to pacify inflammation, reduce burning sensation, and promote tissue repair (Cvet et al., 2017).

Rationale for Selected Medicinal Plants

The herbs included in the present review—*Aloe vera*, *Glycyrrhiza glabra*, *Psidium guajava*, *Azadirachta indica*, *Piper betle*, and *Acacia catechu*—have been carefully selected based on their classical indications, pharmacodynamic properties, and relevance to the pathophysiology of oral ulcers.

Glycyrrhiza glabra (Yashtimadhu) is described in classical texts as *Madhura rasa*, *Sheetavirya*, and *Ropana* in action, making it particularly effective in reducing burning sensation, pain, and mucosal irritation. *Aloe vera* (*Ghritikumari*) is valued for its *Sheeta* and *Pitta-shamaka* properties and is traditionally indicated in inflammatory and ulcerative conditions of mucosal tissues. Both herbs contribute significantly to mucosal protection and wound healing.

Psidium guajava leaves and *Azadirachta indica* (Neem) possess *Tikta* and *Kashaya* rasa, along with *Krimighna* and *Shothahara* actions. Their inclusion addresses microbial load, inflammation, and secondary infection, which are common complicating factors in oral ulcers. *Piper*

betle leaves are traditionally used for oral hygiene and are known for their *Deepana*, *Krimighna*, and *Vedanasthapana* properties, supporting both antimicrobial action and symptomatic relief.

Acacia catechu (Khadira), characterized by strong *Kashaya rasa*, plays a critical role in promoting tissue contraction, reducing exudation, and accelerating wound healing. In Ayurveda, *Khadira* is widely used in oral and dermatological disorders due to its *Rakta-shodhana* and *Ropana* properties, making it highly relevant in ulcer management.

Integrative Pharmacological Perspective

From a modern pharmacological standpoint, the selected herbs demonstrate complementary biological activities, including anti-inflammatory, antimicrobial, antioxidant, immunomodulatory, and wound-healing effects. The combination of these activities enables multi-target modulation of oral ulcer pathology, addressing inflammation, oxidative stress, microbial colonization, and delayed epithelial regeneration simultaneously. Such multi-mechanistic action aligns with the Ayurvedic rationale of addressing both the cause and manifestation of disease, rather than focusing solely on symptom suppression (Patwardhan et al., 2015). (Patwardhan et al. 2017)

Advantages of Polyherbal Formulation in Oral Ulcer Management

Polyherbal therapy offers several advantages in the management of oral ulcers, including reduced risk of adverse effects, enhanced therapeutic coverage, and improved tolerability for long-term or recurrent use. By combining herbs with soothing, antimicrobial, and wound-healing properties, polyherbal formulations provide balanced therapeutic action suitable for repeated local application. This integrative approach also supports the transition of traditional Ayurvedic formulations into standardized, patient-centric dosage forms compatible with contemporary healthcare systems (Patwardhan and Patwardhan, 2017).

Integrative Rationale for Chewable Tablet Dosage Form in Oral Ulcer Management

The successful integration of Ayurvedic therapeutics into contemporary healthcare depends not only on the selection of appropriate medicinal plants but also on the development of dosage forms that enhance therapeutic delivery, patient acceptability, and clinical effectiveness. In disorders

such as *Mukhapaka*, where pathology is localized to the oral cavity, the choice of dosage form becomes particularly critical. Classical Ayurvedic practice emphasizes *Sthanik Chikitsa* (local therapy) for oral diseases to ensure direct drug action at the site of pathology and rapid symptomatic relief. This therapeutic principle provides a strong conceptual foundation for exploring modern oral dosage forms capable of delivering localized effects.

Relevance of Local Drug Delivery in *Mukhapaka*

Both Ayurvedic and modern medical perspectives recognize that localized treatment is essential for managing oral ulcers effectively. Frequent salivary washout, mechanical movements of the oral cavity, and short mucosal residence time often limit the efficacy of conventional topical preparations such as gels, ointments, and mouth rinses. As a result, there is a growing need for dosage forms that can maintain prolonged contact with the oral mucosa while allowing sustained release of active constituents. Chewable tablets offer a practical solution by enabling gradual disintegration within the oral cavity, thereby facilitating extended exposure of the ulcerated area to therapeutic agents (Joshi, Patwardhan and Valiathan, 2023).

Conceptual Alignment with Ayurvedic Principles

From an Ayurvedic standpoint, chewable tablets conceptually resemble traditional oral practices such as *ChurnaPrashana* and *Mukha Dharana*, where medicated substances are retained in the oral cavity for local action. Chewing promotes mechanical stimulation, increased salivary secretion, and uniform dispersion of herbal constituents across the oral mucosa. This process enhances *Sthanik Karma* (local effect) while minimizing systemic absorption, which is particularly desirable in recurrent and inflammatory oral conditions like *Mukhapaka*.

Patient-Centric and Integrative Advantages

Chewable tablets represent a patient-friendly dosage form that does not require water for administration and is generally well accepted across diverse patient populations, including pediatric, geriatric, and dysphagic individuals. Improved palatability and ease of use contribute to better patient adherence, which is a critical determinant of therapeutic success in chronic or recurrent conditions. From an integrative medicine perspective, such patient-centric dosage forms facilitate the broader acceptance and utilization of

Ayurvedic formulations within contemporary healthcare systems (Rao and Anand, 2024).

Integrative Pharmacological Considerations

The act of chewing facilitates intimate mixing of polyherbal constituents with saliva, which may enhance the bioavailability of phytochemicals at the site of action. Saliva itself contains enzymes and immunological factors that contribute to oral wound healing and antimicrobial defense. By enabling prolonged interaction between herbal actives and the oral mucosa, chewable tablets may support synergistic therapeutic effects that align with both Ayurvedic principles of local therapy and modern concepts of mucosal drug delivery (Patwardhan et al., 2015). (Patwardhan et al. 2015)

Translational Significance in Integrative Oral Care

The integration of polyherbal formulations into chewable tablet dosage forms represents a meaningful translational strategy that bridges traditional Ayurvedic knowledge with modern pharmaceutical innovation. Rather than replacing classical concepts, this approach adapts them to contemporary patient needs, regulatory expectations, and quality standards. Such integration supports the development of standardized, evidence-informed, and culturally rooted interventions for oral ulcer management, thereby aligning with the broader objectives of integrative medicine research (Patwardhan and Tillu, 2015).

Critical Appraisal of Existing Evidence on Polyherbal Formulations for Oral Ulcer Management

A growing body of experimental and formulation-based research has explored the use of polyherbal preparations for oral health and ulcer management. These studies collectively suggest that herbal combinations possessing anti-inflammatory, antimicrobial, antioxidant, and wound-healing properties may offer therapeutic benefit in ulcerative oral conditions. However, a critical appraisal of the existing evidence reveals several methodological limitations, heterogeneity in study design, and gaps that restrict the translation of these findings into robust clinical recommendations.

Nature and Quality of Available Evidence

Most published studies on polyherbal formulations for oral ulcer management are formulation-oriented or in vitro investigations, focusing primarily on physicochemical characterization, antimicrobial activity, or

preliminary performance evaluation. While such studies are valuable for establishing formulation feasibility and biological plausibility, they provide limited insight into clinical efficacy, safety, and long-term outcomes. The predominance of laboratory-based studies highlights an early stage of evidence generation rather than mature clinical validation.

Furthermore, the majority of reports emphasize post-formulation evaluation parameters without adequately correlating these outcomes to therapeutic relevance in oral ulcer healing. As a result, although polyherbal formulations are frequently described as “effective” or “promising,” the basis for these conclusions often lacks direct clinical substantiation.

Limitations in Study Design and Reporting

A critical limitation observed across studies is the lack of standardized outcome measures for oral ulcer assessment. Parameters such as ulcer size reduction, pain intensity, healing time, and recurrence rate are inconsistently reported or omitted altogether. In addition, many studies do not specify the diagnostic criteria used to define oral ulcers, making inter-study comparison difficult.

Another concern is the absence of appropriate control groups in several experimental designs. Without comparison to standard-of-care treatments or placebo controls, it is challenging to attribute observed benefits specifically to the polyherbal intervention. Moreover, few studies report dose–response relationships or justify the rationale behind selected herbal concentrations, which limits reproducibility and clinical extrapolation.

Challenges in Standardization and Reproducibility

Standardization remains one of the most significant challenges in polyherbal research. Variability in plant source, extraction method, phytochemical composition, and formulation strategy can substantially influence therapeutic outcomes. Many studies fail to identify marker compounds or establish quality benchmarks, thereby limiting reproducibility across batches and research settings. From an integrative medicine perspective, the absence of robust standardization frameworks undermines confidence in the scalability and regulatory acceptance of polyherbal formulations (Pawar, 2025).

Additionally, few investigations explicitly integrate Ayurvedic pharmacological principles into study

design. While herbs are often selected based on traditional use, the lack of explicit linkage to *Dosha*, *Rasa*, or *Chikitsa Siddhanta* reduces conceptual coherence and weakens the integrative rationale of such studies.

Clinical Evidence Gap

Despite encouraging experimental findings, well-designed clinical trials evaluating polyherbal formulations for oral ulcer management are notably scarce. Randomized controlled trials assessing clinical endpoints such as pain relief, healing duration, recurrence prevention, and patient-reported outcomes are largely absent. This gap represents a major barrier to the incorporation of polyherbal formulations into evidence-based oral healthcare.

Moreover, safety data specific to long-term or recurrent use of polyherbal oral formulations are limited. Given that oral ulcers are often recurrent in nature, safety evaluation over extended periods is essential to support routine clinical use. The lack of systematic pharmacovigilance and toxicity assessment further underscores the need for rigorous clinical research.

Implications for Integrative Medicine Research

The existing evidence supports the conceptual validity of polyherbal approaches in oral ulcer management but remains insufficient for definitive clinical endorsement. Future research must move beyond formulation feasibility and focus on integrative study designs that combine Ayurvedic theoretical frameworks with contemporary clinical research methodologies. Such approaches should prioritize standardized formulations, clearly defined clinical endpoints, and transparent reporting to facilitate meaningful comparison and synthesis of findings (Bisen, 2024; Mankar *et al.*, 2024b).

Challenges, Future Directions, and Translational Perspectives

Despite growing interest in polyherbal formulations for oral ulcer management, several scientific, methodological, and translational challenges continue to limit their integration into mainstream clinical practice. Addressing these challenges is essential for advancing the role of Ayurvedic-based polyherbal therapies within evidence-based integrative medicine.

Challenges in Standardization and Quality Assurance

One of the primary challenges in polyherbal formulation development is the lack of comprehensive standardization frameworks. Variability in plant species, geographical origin, harvesting conditions, and extraction methods can lead to significant differences in phytochemical composition and therapeutic performance. Many existing studies do not adequately define marker compounds or establish batch-to-batch consistency, which poses challenges for reproducibility and regulatory acceptance. Developing standardized quality control protocols that integrate classical Ayurvedic principles with modern analytical techniques remains a critical priority.

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Methodological and Clinical Research Gaps

The current evidence base is largely dominated by formulation-oriented and preclinical studies, with a notable scarcity of well-designed clinical trials. Future research should prioritize randomized controlled trials that evaluate clinically meaningful outcomes such as pain reduction, ulcer healing time, recurrence frequency, and patient-reported quality-of-life measures. Additionally, clear diagnostic criteria and standardized assessment

tools for oral ulcers must be adopted to ensure comparability across studies.

Long-term safety evaluation represents another important research gap. Given the recurrent nature of oral ulcers, polyherbal formulations intended for repeated use must undergo systematic toxicity and pharmacovigilance assessments. Integrating safety monitoring into clinical study designs will be essential to establish confidence among clinicians and regulatory bodies.

Integrative Research and Ayurvedic Alignment

From an integrative medicine perspective, future investigations should explicitly incorporate Ayurvedic conceptual frameworks into study design and interpretation. Linking formulation rationale to *Dosha–Dushya–Samprapti* analysis and *Chikitsa Siddhanta* will enhance conceptual coherence and strengthen the scientific narrative. Such integration can also facilitate hypothesis-driven research that bridges traditional knowledge systems with modern biomedical paradigms.

Translational and Regulatory Considerations

Translating polyherbal chewable tablet formulations from experimental research to clinical and commercial application requires careful consideration of regulatory pathways. Harmonization between traditional medicine guidelines and contemporary pharmaceutical regulations is necessary to support product development, quality assurance, and market authorization. Early engagement with regulatory frameworks and adherence to good manufacturing practices can facilitate smoother translation from bench to bedside.

Future Directions

Future research should focus on the development of standardized, clinically validated polyherbal chewable tablets supported by robust experimental and clinical evidence. Multidisciplinary collaboration among Ayurvedic scholars, pharmaceutical scientists, clinicians, and regulatory experts will be essential to advance this field. Additionally, exploring biomarker-based evaluation and patient-centered outcomes can further strengthen the evidence base and support personalized approaches to oral ulcer management.

Translational Significance in Integrative Oral Healthcare

Polyherbal chewable tablets represent a promising integrative intervention that aligns

traditional Ayurvedic therapeutic principles with modern patient-centric pharmaceutical design. By addressing current challenges through rigorous research and standardization, such formulations have the potential to contribute meaningfully to integrative oral healthcare. Continued efforts toward evidence generation, methodological refinement, and regulatory alignment will be critical to realizing their translational potential.

Methodological Framework and Integrative Evaluation Perspective

This review follows an integrative narrative framework to explore the relevance of polyherbal formulations, with particular emphasis on chewable tablets, in the management of oral ulcerative disorders. Relevant literature was identified through systematic searching of electronic databases such as PubMed, Scopus, Google Scholar, and ScienceDirect using terms related to oral ulcers, *Mukhapaka*, polyherbal therapy, herbal oral drug delivery systems, and chewable tablet formulations. In addition, classical Ayurvedic texts and standard secondary references were consulted to contextualize traditional disease concepts and therapeutic principles. Peer-reviewed articles addressing herbal composition, pharmacological activity, formulation approaches, and applications in oral healthcare were considered, while duplicated and non-relevant publications were excluded.

From a pharmaceutical and translational perspective, the reviewed literature indicates that chewable tablets are investigated as a patient-friendly oral dosage form designed to deliver herbal constituents locally within the oral cavity. Rather than focusing on specific manufacturing processes or detailed physicochemical measurements, published studies emphasize formulation strategies that support uniform distribution of herbal actives, acceptable taste characteristics, and sufficient residence time in the oral cavity. These aspects are particularly relevant for oral ulcer management, where localized and sustained mucosal exposure is essential for therapeutic benefit.

Evaluation approaches described in the literature primarily aim to ensure fundamental quality attributes of polyherbal chewable formulations, including dosage consistency, mechanical stability, and disintegration behavior appropriate for oral use. Although standard pharmacopeial assessments are commonly applied, their role in integrative medicine extends beyond quality assurance to supporting safety, reproducibility, and patient acceptability.

Importantly, several studies acknowledge that formulation-level evaluation alone is insufficient and should be complemented by biological and clinical investigations to substantiate therapeutic relevance.

From an integrative medicine viewpoint, methodological robustness also requires alignment with Ayurvedic therapeutic concepts. Evaluation frameworks that incorporate principles such as *Sthanik Chikitsa*, *Shamana*, and *Ropana*, alongside contemporary quality and safety standards, are essential for the meaningful translation of herbal formulations. The reviewed evidence highlights the need for balanced methodological approaches that integrate classical Ayurvedic rationale with modern scientific validation, thereby facilitating the development of standardized, reproducible, and clinically meaningful polyherbal interventions for oral ulcer management.

Evidence from Polyherbal Formulations and Integrative Studies:

A growing number of experimental and formulation-based studies have explored the potential of polyherbal preparations for the management of oral and mucosal inflammatory conditions. Collectively, these studies suggest that herbal combinations possessing anti-inflammatory, antimicrobial, antioxidant, and wound-healing properties may be beneficial in oral ulcer management. However, a closer examination of the available evidence reveals significant heterogeneity in study design, outcome measures, and clinical relevance.

Several investigations have demonstrated that polyherbal formulations incorporating medicinal plants such as *Aloe vera*, *Glycyrrhiza glabra*, *Azadirachta indica*, *Psidium guajava*, and *Acacia catechu* exhibit antimicrobial activity against oral pathogens and promote wound-healing responses in experimental models. These findings support the traditional Ayurvedic rationale for combining *Shothahara*, *Krimighna*, and *Ropana* herbs in ulcerative oral conditions. Nevertheless, the majority of these studies remain limited to in vitro assessments or formulation feasibility evaluations, with minimal emphasis on clinically relevant endpoints.

A notable limitation across the literature is the lack of disease-specific focus. Many polyherbal studies included in earlier reviews were conducted on conditions unrelated to oral ulcer pathology, such as gastrointestinal disorders, respiratory ailments, or systemic inflammatory states. While these studies

provide general insight into the pharmacological potential of herbal combinations, their direct applicability to oral ulcer management is limited. For integrative oral healthcare research, evidence must be context-specific and aligned with mucosal pathology.

Furthermore, most studies emphasize formulation characteristics and preliminary biological activity without establishing a clear correlation between these parameters and therapeutic outcomes such as pain reduction, ulcer size regression, healing duration, or recurrence prevention. The absence of standardized clinical outcome measures restricts meaningful comparison across studies and weakens the strength of evidence supporting polyherbal interventions in oral ulcer care.

Another important concern is the limited integration of Ayurvedic conceptual frameworks into evidence generation. Although herbs are often selected based on traditional usage, few studies explicitly relate formulation rationale to *Dosha* involvement, *Samprapti*, or *Chikitsa Siddhanta*. This disconnect reduces the conceptual coherence expected in integrative medicine research and limits the translational relevance of findings for Ayurvedic clinical practice.

Overall, the existing evidence supports the theoretical and experimental plausibility of polyherbal formulations for oral ulcer management but remains insufficient for definitive clinical endorsement. The current literature highlights the need for well-designed, disease-specific studies that integrate Ayurvedic principles with contemporary research methodologies. Such studies should prioritize standardized formulations, clearly defined oral ulcer outcomes, and clinically meaningful endpoints to strengthen the evidence base and support translation into integrative oral healthcare.

II. CONCLUSION:

Oral ulcerative disorders represent a clinically significant and recurrent challenge that adversely affects oral function and quality of life. Conventional management strategies, although effective for short-term symptomatic relief, are often limited by inadequate mucosal retention, frequent application requirements, and concerns related to long-term safety. These limitations highlight the need for alternative therapeutic approaches that are both effective and suitable for repeated local application.

Ayurveda offers a comprehensive understanding of oral ulcerative conditions under

the entity of Mukhapaka, emphasizing Pitta–Rakta vitiation, localized inflammation, and impaired tissue integrity. The Ayurvedic principles of Shamana, Ropana, and Sthanik Chikitsa provide a rational framework for the selection and combination of medicinal plants possessing anti-inflammatory, antimicrobial, antioxidant, and wound-healing properties. Polyherbal formulations based on these principles allow for synergistic, multi-target therapeutic action while maintaining a favorable safety profile.

The integration of polyherbal concepts with modern pharmaceutical dosage forms, such as chewable tablets, represents a meaningful translational strategy in integrative medicine. Chewable tablets facilitate prolonged mucosal contact, improved patient compliance, and localized drug delivery within the oral cavity, thereby aligning classical Ayurvedic therapeutic intent with contemporary patient-centric design. However, despite encouraging formulation-level and preclinical evidence, robust clinical validation of polyherbal chewable tablets for oral ulcer management remains limited.

Future research should prioritize standardized formulation development, incorporation of Ayurvedic conceptual frameworks into study design, and well-structured clinical trials evaluating clinically relevant outcomes. Addressing challenges related to quality assurance, reproducibility, and regulatory alignment will be essential for successful translation into routine clinical practice. Overall, polyherbal chewable tablets hold promise as an integrative therapeutic approach for oral ulcer management, warranting further systematic investigation to establish their efficacy, safety, and role within evidence-based integrative oral healthcare.

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