

## ORAL DISSOLVING FILM: NEW APPROACH IN DRUG DELIVERY

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### ABSTRACT

Mouth dissolving film (MDF) is a pharmaceutical dosage form that dissolves or disintegrates rapidly in the oral cavity, releasing medication for absorption through the oral mucosa (lining of the mouth) and/or for swallowing. These films are designed to be convenient for patients who may have difficulty swallowing traditional oral dosage forms like tablets or capsules. Mouth dissolving films are typically composed of water-soluble polymers that rapidly disintegrate upon contact with saliva. The film may also contain active pharmaceutical ingredients (APIs), sweeteners, flavoring agents, and other excipients. The rapid disintegration of the film in the mouth allows for quick and efficient drug delivery. The films are easy to administer, especially for individuals who have difficulty swallowing or for pediatric and geriatric patients. Since the drug is delivered directly through the oral mucosa, it can lead to a faster onset of action compared to traditional oral dosage forms that need to pass through the gastrointestinal tract. The oral mucosa provides a rich blood supply, which can lead to improved bioavailability for certain drugs. Mouth dissolving films are often more convenient and discreet than traditional dosage forms, making them suitable for on-the-go use.

**KEYWORDS:** Mouth dissolving, Sweeteners, Flavouring, Blood, Swallowing.

### INTRODUCTION

The need for more efficient and patient-friendly drug delivery techniques has fueled innovation at the nexus of science and medicine, propelling the pharmaceutical industry's constant change. Among the many innovations, mouth dissolving films (MDFs) have become a cutting-edge method that could revolutionize medicine administration. This innovative drug delivery system provides a quick, easy, and covert way to administer therapeutic agents, challenging the conventional forms of pills, capsules, and syrups.

MDFs, sometimes referred to as oral thin films or dissolving films, are thin, flexible sheets that release their medication almost instantly when they come into contact with saliva. Their capacity to administer medications without requiring swallowing or water represents a paradigm shift in patient compliance, especially for patients—such as the elderly and pediatric

populations—who have trouble swallowing traditional dosage forms.

Over the past ten years, there has been a significant advancement in the development and formulation of MDFs, which has ushered in a new era in pharmaceutical science. An outline of MDFs is given in this introduction, along with information on their benefits, uses, and potential to transform drug delivery in a number of medical specialties. As we delve deeper into the world of MDFs, we uncover a promising avenue that stands to benefit both patients and healthcare providers, paving the way for improved therapeutic outcomes and a brighter future in medicine.

**Development of MDFs:** Water-soluble polymers, plasticizers, and active pharmaceutical ingredients (APIs) are the usual components of MDFs. A number of procedures are involved in the development of MDFs, such as the selection of appropriate materials, formulation optimization, and manufacturing procedures.

Taste masking, drug loading, and film thickness are important aspects of MDOF development.

The idea of dosage forms that disintegrate or dissolve in the mouth began with orally disintegrating tablets (ODTs). These tablets were designed to rapidly disintegrate in the oral cavity without the need for water, providing a convenient option for patients who had difficulty swallowing tablets or capsules.

In the 1990s, the focus shifted from tablets to thin films as an alternative dosage form. The development of mouth dissolving films gained attention as a novel and patient-friendly approach. Thin film technology became a significant area of research and development. Researchers explored various polymers and formulation techniques to create films that would rapidly dissolve in the mouth while maintaining the stability of the incorporated pharmaceutical ingredients. Researchers experimented with different polymers, plasticizers, and other excipients to optimize the properties of mouth dissolving films. The goal was to achieve quick disintegration, pleasant taste, and stability of the film during storage.

As formulation technologies improved, several pharmaceutical companies began commercializing mouth dissolving films. These films were introduced for a range of medications, catering to patient populations that faced challenges with traditional oral dosage forms. Over time, the applications of mouth dissolving films expanded beyond pharmaceuticals. They have been used for various products, including nutraceuticals, personal care products, and even in the food industry for edible films. Research and development in the field of mouth dissolving films continue, with a focus on enhancing drug delivery, taste masking, and ensuring the reproducibility and scalability of manufacturing processes.

The development of mouth dissolving films represents a significant advancement in drug delivery technology, providing a patient-centric approach to medication administration. As technology and formulation expertise continue to evolve, it is likely that mouth dissolving films will see further improvements and broader applications in the future.

#### Benefits of MDFs

1. **Patient Compliance:** MDFs are perfect for patients who have trouble swallowing traditional dosage forms because they are simple to handle and do not require water for administration.
2. **Quick Onset of Action:** MDFs facilitate faster drug absorption, which in turn causes a quicker onset of therapeutic effects because of their quick dissolution in the oral cavity.
3. **Enhanced Bioavailability:** Preventing the liver's first-pass metabolism can make some medications more bioavailable.

4. **Taste Masking:** In MDFs, some medications' unpleasant tastes and odors can be successfully covered up, increasing patient acceptability.
5. **Portable and Discreet:** MDFs are small and discreet enough to carry around, which makes them a good option for administering medication while on the go.

#### Limitations and Challenges

- **Formulation Complexity:** It can be difficult to strike the correct balance between drug content, film thickness, and taste masking.
- **Stability Problems:** MDFs' shelf life may be impacted by changes in temperature and moisture levels.
- **Manufacturing Challenges:** It can be technically difficult to produce MDFs at an industrial scale with consistent quality.
- **Limited Drug Compatibility:** Certain medications, especially those with stringent stability requirements, cannot be used with MDF formulations.

**Applications of MDFs:** MDFs have found applications in various therapeutic areas, including:

**Pediatrics:** Ideal for administering medications to children who may have difficulty swallowing pills or capsules.

**Geriatrics:** Well-suited for elderly patients with swallowing difficulties.

**Psychiatry:** Rapid-onset drugs, such as anti-anxiety medications, can benefit from MDOF delivery.

**Emergency Medicine:** MDFs offer a quick and convenient way to administer life-saving medications.

**Future Prospects:** Research on taste masking techniques, formulation stability, and drug compatibility is all being done as the field of MDFs continues to develop. Furthermore, the creation of customized MDFs based on the requirements of each patient is a promising direction for the future.

#### CONCLUSION

Oral films that dissolve in the mouth are a major development in drug delivery, providing a convenient and effective substitute for conventional dosage forms. Although they present some formulation and stability issues, their benefits in terms of quick drug onset and patient compliance make them an invaluable asset to the pharmaceutical sector. MDFs are expected to become more significant in contemporary medicine as science and technology develop.

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