



King Saud University
Saudi Pharmaceutical Journal

www.ksu.edu.sa
www.sciencedirect.com



REVIEW

Orally disintegrating films: A modern expansion in drug delivery system



Muhammad Irfan ^{a,*}, Sumeira Rabel ^a, Quratulain Bukhtar ^a,
Muhammad Imran Qadir ^b, Farhat Jabeen ^c, Ahmed Khan ^d

^a Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, GC University, Faisalabad, Pakistan

^b Institute of Molecular Biology and Biotechnology, Bahauddin Zakariya University, Multan, Pakistan

^c Department of Zoology, Wildlife & Fisheries, GC University, Faisalabad, Pakistan

^d Department of Pharmacy, Quaid-i-Azam University, Islamabad, Pakistan

Received 30 January 2015; accepted 28 February 2015

Available online 10 March 2015

KEYWORDS

ODFs;
Novel drug delivery;
Formulation parameters;
Manufacturing techniques

Abstract Over the past few decades, tendency toward innovative drug delivery systems has majorly increased attempts to ensure efficacy, safety and patient acceptability. As discovery and development of new chemical agents is a complex, expensive and time consuming process, so recent trends are shifting toward designing and developing innovative drug delivery systems for existing drugs. Out of those, drug delivery system being very eminent among pediatrics and geriatrics is orally disintegrating films (ODFs). These fast disintegrating films have superiority over fast disintegrating tablets as the latter are associated with the risks of choking and friability. This drug delivery system has numerous advantages over conventional fast disintegrating tablets as they can be used for dysphasic and schizophrenic patients and are taken without water due to their ability to disintegrate within a few seconds releasing medication in mouth. Various approaches are employed for formulating ODFs and among which solvent casting and spraying methods are frequently used. Generally, hydrophilic polymers along with other excipients are used for preparing ODFs which allow films to disintegrate quickly releasing incorporated active pharmaceutical ingredient (API) within seconds. Orally disintegrating films have potential for business and market exploitation because of their myriad of benefits over orally disintegrating tablets. This present review attempts to focus on benefits, composition, approaches for formulation and evaluation of ODFs. Additionally, the market prospect of this innovative dosage form is also targeted.

© 2015 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

* Corresponding author. Tel.: +92 320 6504412.

E-mail address: manipharma@yahoo.co.uk (M. Irfan).

Peer review under responsibility of King Saud University.



Production and hosting by Elsevier

Contents

1. Introduction	538
2. Formulation	539
2.1. Active pharmaceutical ingredient	539
2.2. Hydrophilic polymers	539
2.3. Plasticizers	540
2.4. Surfactants	540
2.5. Flavor	540
2.6. Sweetening agents	540
2.7. Saliva stimulating agent	540
2.8. Coloring agents	540
3. Conventional approaches for manufacturing of orodispersible films	540
3.1. Solvent casting method	541
3.2. Semi-solid casting method	541
3.3. Hot melt extrusion	541
3.4. Solid dispersion extrusion	542
3.5. Rolling method	542
3.6. Spray technique	542
4. Characterization and evaluation	542
4.1. Organoleptic evaluation	542
4.2. Mechanical properties	543
4.2.1. Thickness test	543
4.2.2. Dryness test/tack test	543
4.2.3. Tensile strength	543
4.2.4. Percent elongation	543
4.2.5. Tear resistance	543
4.2.6. Young's modulus	543
4.2.7. Folding endurance	543
4.3. Swelling property	543
4.4. Transparency	543
4.5. Contact angle	544
4.6. Content uniformity	544
4.7. Disintegration time	544
4.7.1. Slide frame method	544
4.7.2. Petri dish method	544
4.8. In-vitro dissolution test	544
4.9. Visual inspection and surface morphology	544
4.10. Surface pH	544
4.11. Moisture uptake and moisture loss	544
5. Packaging of orally disintegrating films	544
6. Conclusion	545
References	545

1. Introduction

Oral route of drug administration is a most preferred route due to its ease of administration, non-invasiveness, adaptability, patient compliance and acceptability. Regarding oral route of drug administration, many substitutes have continuously been presented by using recent novel technologies for pediatrics, geriatrics, nauseous and non-compliance patients. Bioadhesive mucosal dosage forms including adhesive tablets, gels and patches are outcomes of technological development. Among various dosage forms, the use of polymeric films for delivering medication into buccal cavity has developed great potential in recent era (Arya et al., 2010). Orally disintegrating films (ODFs), when placed on tongue, immediately hydrates by soaking saliva following disintegration and/or dissolution

releasing active pharmaceutical agent from the dosage form (Chauhan et al., 2012). ODFs are kind of formulations which are commonly prepared using hydrophilic polymers enabling rapid dissolution upon contact with saliva. Oral disintegrating tablets (ODTs) and oral disintegrating films (ODFs) are the typical examples of orally disintegrating drug delivery systems. These systems were developed in late 1970 to serve as an alternative to conventional dosage forms, for instance, fast disintegrating tablets and capsules for geriatrics and pediatric patients having difficulty in swallowing conventional dosage forms (Liew et al., 2012). A typical ODF is usually equal to the size of a postage stamp. In market place, the introduction of ODT was strongly associated with counseling of patients about the appropriate administration by giving instruction like “do not chew/do not swallow”. However, in spite of these

Download English Version:

<https://daneshyari.com/en/article/5551566>

Download Persian Version:

<https://daneshyari.com/article/5551566>

[Daneshyari.com](https://daneshyari.com)