



DUREDAS Technology: A Cutting-Edge Bilayer tablet strategy

Saurabh D. Nikam^{1*}, Rahul Y. Pagar¹, Avinash B. Gangurde¹, Niketan N. Khairnar¹, Makrand V. Hire¹, Mayur K Joshi¹

¹Department of Pharmaceutics, K.B.H.S.S. Trust Institute of Pharmacy Malegaon, Nashik, Maharashtra, India.

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KEYWORDS

DUREDAS technology, Bilayer tablet, Immediate release, control release.

ABSTRACT:

Introduction:

The dual drug delivery system, or DUREDAS, combines the liberate of one medicine, or two disparate drugs combined in one dosage form using a bilayer tablet technology. Two layers are used in this technology: immediate release, which releases the medication as a loading dosage, and persistent release, which extends the duration of the medication's effects. The simultaneous release of two distinct medications in two separate ways is an additional strategy that enables them to function as individualized medicine for patients with various problems or in conjunction with one another to treat the same medical condition. A compressed granule with instant release and a granule with regulated release are applied to the tablet to create a bilayer effect. The gastrointestinal tract (GIT) absorbs liquid, which the regulated hydrophilic matrix system then expands to dissolve. In this review Dual drug delivery system (DUREDAS) technology of formulating bilayer tablets with different approaches and benefits is elaborated.

Objectives: The objective of this review is to comprehensively evaluate and analyse DUREDAS Technology, focusing specifically on its cutting-edge Bilayer tablet strategy. This review aims to provide an in-depth understanding of the technology's key features, capabilities, and potential impact in the pharmaceutical and healthcare industries. The objective is to elucidate the advantages, challenges, and overall effectiveness of this approach.

Conclusions:

Dual drug delivery systems (DUREDAS) are a state-of-the-art method in pharmaceutical research, with several benefits that have the potential to change the face of medicine. In the pursuit of more individualized and efficient therapeutic approaches, researchers will continue to focus on these systems' capacity to handle the intricacies of different diseases and enhance patient outcomes.

1. Introduction

Dual drug delivery system (DUREDAS) is a technology of formulating bilayer tablets, in which it consists of dual release of one drug or dual release of two different drugs in one dosage form. (1)(2)

A principal benefit of dual drug delivery systems is their capacity to produce synergistic effects. Researchers hope to get improved therapeutic outcomes by combining two

medications with different mechanisms of action, beyond what could be accomplished with either medication alone. Dual drug delivery systems are particularly appealing in the setting of complicated diseases like cancer, where many routes may need to be targeted for optimal results. This synergy can lead to better therapeutic success. These systems are relevant not only to oncology but also to infectious disorders, heart problems, and other therapeutic domains. Dual drug



delivery systems' wide range of applications demonstrates their potential to completely transform treatment plans for a variety of medical specialties.

The word dual release means for release of a drug in two different ways or the release of two different drugs in two ways. The ways to release drugs are instant liberate and persistent liberate of the same drug or two different drugs.(3)This means that bilayer tablets formulated using this technology have two layers that show instant and persistent liberate of the drug. (4) The layer of instant release is formulated using different super disintegrants that release the drug as a loading dose for those drugs that require quick onset of action and have short half-life and the persistent release layer prolongs the action of those drugs this is one of the best approaches of this technology. The persistent-release layer was formulated using persistent-release polymers that persistent the drug release (5)(6)(7)

Another approach is the subsequential release of two different drugs in two different ways.(8) In this approach, one drug shows immediate action which is incorporated in the layer of instant release and another drug shows persistent release which is incorporated in the persistent release layer.(9)(10)(11) In this way the two different drugs work on the same medical condition or work as personalized medicine for patients who have different medical conditions and are administered in a single dosage form which increases its compliance and simple out its dose regimen.

To prepare a tablet compressed granule of immediate release is usually applied first, followed by one of controlled release which means two independent compression stages (12). This technique can result in the characteristic bilayer effect. However, both layers can also contain controlled released elements for maximum therapeutic benefit (13)(14). By using this a controllable hydrophilic matrix system is created by combining an instantaneous release layer with a hydrophilic layer. This system takes up fluids from the digestive system (GIT). It transforms into a gummy, porous gel as soon as it absorbs, primarily serving as a barrier between the dosage form and its surroundings. By expanding, the gel penetrates more drug substances and dissolves them. (12)(15)(16)(17)(18)

2. Conclusion

Dual drug delivery systems (DUREDAS) are a state-of-the-art method in pharmaceutical research, with several benefits that have the potential to change the face of medicine. In the pursuit of more individualized and efficient therapeutic approaches, researchers will continue to focus on these systems' capacity to handle the intricacies of different diseases and enhance patient outcomes.

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