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TO STUDY THE EFFECT OF NATURAL POLYMER ON THE RELEASE OF OSMOTIC TABLET FOR COLON SPECIFIC DRUG DELIVERY SYSTEM

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ABSTRACT: Controlled and targeted drug delivery system is more advantages than conventional dosage in various aspects. In the case of treating colonic disorders such as inflammatory bowel disease, the drugs do not reach the site of action in appropriate concentration. Thus there is a need to develop effective and safe therapy for the treatment of these colonic disorders, using site-specific drug delivery approach. The present study was aimed to develop microbially triggered osmotic pump so as to achieve colon specific delivery of dexamethasone. The microbially triggered colon-targeted osmotic pump (MTCT-OP) based tablets are prepared by using two types of polymers chitosan and pectin. The tablet is formulated by using directly compressible method, which consists of an osmotic core (drug and chitosan with organic acid as excipient) and (drug and pectin with organic acid as excipient) with an inner semi-permeable membrane layer composed of the mixture of cellulose acetate and chitosan powder and an outer enteric-coating layer of eudragit® L100-55. Then a comparative study of this formulation was done. It was found that shows F4S2E1 better results than P4M2C1. The % drug content in the case of F4S2E1 and P4M2C1 was found 99.02 ± 0.03 and 98.68 ± 0.04, respectively. The cumulative % drug release study showed that maximum drug release was found in the case of F4S2E1 and P4M2C1 was 99.027 ± 0.47 and 95.027 ± 0.47 respectively at 24 h. The results from various evaluations show that formulation code F4S2E1 and P4M2C1 are found to be optimized batch. In both formulations, F4S2E1 shows better results in all parameters. The drug was almost completely released in SCF after 24 h.

INTRODUCTION: The oral route is the most convenient and preferred route for the drug delivery system but the colon-targeted drug delivery system (CDDS) has been more focus for studies in recent years due to its potential to improve treatment of local diseases affecting the colon, with minimum systemic side effects [1]. Some examples of disease states which impact the colon include [2] Crohn's disease (CD), ulcerative colitis (UC), and irritable bowel syndrome (IBS).

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Targeted drug delivery into the colon is highly desirable for local treatment of a variety of bowel diseases such as ulcerative colitis, Crohn's disease, amebiosis, colonic cancer, and systemic delivery of drugs [3]. The aim of a targeted drug delivery system is to provide a desired drug concentration in the body by delivering a therapeutic amount of drug to a target site [4].

It is suitable and required for the drugs having instability, low solubility and short half-life, a large volume of distribution, poor absorption, low specificity, and therapeutic index [5]. Targeting may provide maximum therapeutic activity (by preventing degradation or inactivation of the drug). Meanwhile, it can also minimize adverse effects, the toxicity of potent drugs by reducing dose [10].