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Nanoparticles loaded sublingual film as an Effective Treatment of Chemotherapy Induced Nausea and Vomiting

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Abstract: The aim of present study was formulation and evaluation of Mucoadhesive sublingual film containing nanoparticles of poorly water soluble drug to get quick disintegration for rapid release and onset of action in case of nausea and vomiting produced by chemotherapy, migrane, headache, food poisoning and viral infections. To improve the solubility of Domperidone, nanosuspension was prepared by using high speed homogenizer. HPMC E 5 and SDS were used to stabilize the nanosuspension. HPMC E 5 is a key ingredient in formulation of film which rapidly disintegrate in presence of water or saliva. Formulations weer prepared by varying the concentaration of polymer and plasticizer. Mucoadhesive polymer such as carbopol 934P was used to in the film for mucoadhesion of film to sublingual mucosa. Nanosuspensions were evaluated for parameters like Particle size, PDI and Zeta potential. Films were evaluated for parameters like drug content, tensile strength, in-vitro drug release, folding endurance, surface pH, taste, thickness, disintegration time, ex vivo Mucoadhesion time, ex vivo permeation study and drug excipients compatibility study. In this study, the release profile depends on the concentration of HPMC E 5. A 3^2 Factorial study was applied to check the effect of varying concentration of HPMC E 5 and propylene glycol on dependent variables i.e disintegration time, % in vitro drug release and tensile strength. Regression analysis and analysis of variance were performed for dependant variables. Study demonstrates dissolution rate increased in film containing the nanoparticles of drug and quick disintegrating film of Domperidone can efficiently be formulated.

Keywords: Nanoparticles loaded sublingual film, Chemotherapy, Nausea and Vomiting.

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