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FORMULATION AND EVALUATION OF MUCOADHESIVE *IN-SITU* NASAL GEL OF CYCLOBENZAPRINE HYDROCHLORIDE

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ABSTRACT: Cyclobenzaprine hydrochloride (CBZ) is a muscle relaxant. It has 33% bioavailability due to its first pass effect and hence posses problems in the development of oral sustained release formulations. Mucoadhesive thermo reversible *in-situ* nasal gel of Cyclobenzaprine HCl was designed and developed to sustain its release due to the increased nasal residence time of the formulation. Poloxamer 407 (PF 127) was selected as it has excellent thermo sensitive gelling properties. HPMCK4M was added to impart mucoadhesive to the formulation, and PEG 400 was used to enhance the drug release. 3^2 Factorial designs were employed to assess the effect of concentration of HPMCK4M and PEG 400 on the performance of *in-situ* nasal gel systematically and to optimize the formulation. An optimized *in-situ* nasal gel was evaluated for appearance, pH, drug content, gelation temperature, mucoadhesive force, viscosity and *ex-vivo* permeability of drug through nasal mucosa of a goat. Additionally, this formulation was proved to be safe as histopathological studies revealed no deleterious effect on nasal mucosa of a goat after prolonged exposure of 21 days to the optimized formulation. Thus the release of Cyclobenzaprine HCl can be sustained if formulated in an *in-situ* nasal gel containing poloxamer 407 to achieve its prolonged action.