Abstract

For the effective treatment of periodontitis, a prolonged drug release at the infected pocket is essential. Medicated dental pastes and gels for the extended period of retention in infected cavity were prepared for improved local action. Ciprofloxacin hydrochloride and Ofloxacin was used as model drug. Medicated dental pastes were prepared using release retardant mucoadhesive polymer like Methylcellulose, Hydroxy propyl methylcellulose, Hydroxy ethyl cellulose, Hydroxy propyl cellulose and Sodium carboxy methylcellulose, whereas medicated dental gels were prepared with different mucoadhesive polymer like Methylcellulose, Hydroxy propyl methylcellulose, Hydroxy ethyl cellulose, Hydroxy propyl cellulose and Sodium carboxy methylcellulose in different concentrations of propylene glycol. The prepared formulations were subjected for various physicochemical studies like pH, spreadability, extrudability, viscosity, drug content, in vitro drug release, rheological studies, DSC, FTIR and stability studies. In vitro drug release studies were carried out in diffusion cell using pH 7.2 phosphates buffer as receptor medium. In vitro drug release studies exhibited extended release of drug over a period of 6 hrs and release was depended on the type of polymer used. DSC and FTIR studies indicate that there was no interaction between drug-polymer and drug-other additives. During rheological studies a wider range of shear rate values was studied to establish the paste and gels nature. Plots of shear rate versus shear stress shown that all the formulations were non-Newtonian and exhibit pseudoplastic behavior. Optimal formulations were selected for stability studies. During stability studies different parameters like pH, spreadability, extrudability, viscosity and drug content, did not show any significant (p>0.05) variation. In conclusion, hydrocolloid based medicated dental pastes and gels appear to be potential in controlling the release of medicament.

Key words: hydrochloride, Ofloxacin, Medicated dental pastes, Medicated dental gels