
ABSTRACT

Mucoadhesive buccal tablets using different ratio of carbopol 934p, hydroxy propyl methyl cellulose K4M, sodium carboxy methyl cellulose, hydroxy ethyl cellulose in various combinations were prepared in order to obtain new formulation containing Tramadol hydrochloride for management of moderate to severe pain. Nine different formulations of mucoadhesive buccal tablets of Tramadol hydrochloride were prepared, which contain polymers such as carbopol 934p, hydroxy propyl methyl cellulose K4M, sodium carboxy methyl cellulose, hydroxy ethyl cellulose in various combinations. Tablets were prepared by direct compression method and impermeable backing layer of ethyl cellulose is also placed. Tablets thus prepared are characterized by swelling studies, % matrix erosion, surface pH, bioadhesive strength, *in vitro* drug dissolution and *in vitro* diffusion studies. All the formulation gave the satisfactory result in terms of bioadhesive performance, physical and mechanical properties and surface pH. Drug release and drug diffusion from the tablets were depended on the ratio and type of the polymer used in the formulation. The best mucoadhesive performance and best *in vitro* drug release profile were achieved by using drug: carbopol 934p: hydroxy propyl methyl cellulose K4M in a ratio of (1: 1: 1). The chosen tablet containing 50 mg of Tramadol Hydrochloride performed 8 h sustained drug release.

Keywords: Tramadol hydrochloride, Carbopol 934p, Hydroxy propyl methyl cellulose K4M, Sodium Carboxy methyl cellulose, Hydroxy ethyl cellulose.