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Preparation And Evaluation of Mefenamic Acid Emulgel

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Abstract

Topical routes include the vagina and skin. These apply to a wide range of situations. The present study was focused on the formulation and estimation of mefenamic acid emulgel. Mefenamic acid (API) was obtained from the Sigma Aldrich Pvt Ltd. The formulated emulgel was evaluated for parameters i.e., physical appearance, droplet size & polydispersity index (PDI), In-vitro drug release, % drug content, viscosity, pH & stability. The drug- mefenamic acid was tested for solubility in different solvents. Mefenamic acid was found poor soluble in solvents i.e., distilled water & peppermint oil. Particles size and particle size index was observed efficient for better drug release and bioavailability of incorporated drug that confirms for its uniqueness in the formulation. In-vitro drug release and viscosity are important factor behind the quality of formulated nano emulsion. In the same context, these two factors showed optimistic behaviour of emulgel. Mefenamic acid (emulgel) can be used as anti-nociceptive & anti-inflammatory for topical delivery. It was successfully formulated and evaluated for authentic and selective parameters. Emulgel better enhances the topical delivery of even poorly soluble drugs like mefenamic acid.

Keywords: Emulgel, Mefenamic Acid, In-Vitro Drug Release, Ph, Particle Size

Introduction

Topical drug delivery methods include topical drug administration to any part of the body via the ophthalmic, rectal [1]. They are an emulsion of gel, as their name would imply. Both the water-in-oil and the oil-in-water types of emulsion are utilized as vehicles to bring numerous medications to the skin [2]. When a medicine is applied to the topical areas, it avoids pre-systemic metabolism, pH of stomach- disturbances and fluctuations in plasma conc. that occur often when a drug is delivered orally [3].

Mefenamic acid is a member of the anthranilic acid derivative class. Mefenamic acid, like other NSAIDs, inhibits the enzyme cyclo-oxygenase (Cox-1&-2) which prevents the creation of intracellular prostaglandins, which are crucial for the pain and inflammatory pathways [4].

Molecular Formula: C15-H15-N-O2 (Figure 1)

Mefenamic acid is quickly absorbed when used orally. Absorption volume averaged 30.5 mcg/h/ml. For a 500mg pill, the apparent volume of distribution was about 1.06 litre/kg. The cytochrome P450 (CYP2C9) enzyme converts mefenamic acid into 3-hydroxylmethylmefenamic acid- as metabolite I. A third oxidation step could lead to a 3-carboxymefenamic acid- as metabolite II. Mefenamic acid is largely eliminated in the urine (52% of a dose) as the glucuronides (6%), 3-hydroxymefenamic acid (25%) and 3-carboxymefenamic acid (21%). Up to 20% of the dosage is eliminated in the faeces. Mefenamic acid has an elimination half-life of around 2 hours [5].

On the basis of above literature survey, I found that emulgel of mefenamic acid can be developed with different gelling agent to facilitate dissolution, bioavailability, and stability of the topical emulgel formulation. This research focuses on the formulation and characterization of topical mefenamic acid emulgel with diverse gelling agents and evaluation of same by following standard parameters.

Materials and Methods

Experimental requirements

The following are the Equipment, Instrument, and Materials that were used for the formulation and evaluation of emulgel- (Table 1)