HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC METHOD FOR DETERMINATION OF MOMETASONE FUROATE IN HUMAN PLASMA

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ABSTRACT

A novel sensitive high-performance liquid chromatography assay is developed and validated for the determination of mometasone furoate in human plasma. This method used a C18 column with a mobile phase consisting of methano: water (88% :12%), flow rate is 1 ml/min and UV detection at 248 nm. The method was found to be selective, simple, economical, accurate, reproducible, rapid and reliable for estimation of mometasone furoate level in human plasma.

KEYWORD: mometasone furoate, human plasma, HPLC.

INTRODUCTION

Mometasone furoate (MF) is a topical corticosteroid; it has anti-inflammatory, anti-pruritic, and vasoconstrictive properties. Corticosteroids act by the induction of phospholipase A2 inhibitory proteins, collectively called lipocortins. It is postulated that these proteins control the biosynthesis of potent mediators of inflammation such as prostaglandins and leukotrienes by inhibiting the release of their common precursor arachidonic acid (1,2). It is a potent glucocorticoid that has been used in the treatment of topical dermatological disorders and allergic rhinitis (3) Although some are reported HPLC methods for quantification of mometasone furoate in pharmaceutical formulations such as creams, cosmetic products (4) but these methods are inappropriate for estimation of the mometasone in biological fluids. Extensive literature survey did not reveal any suitable method for estimation of mometasone in plasma. Thus, in the proposed approach it was planned to develop a simple, sensitive and accurate high performance liquid chromatographic
(HPLC) method for estimation of mometasone in human plasma samples. The method was used for estimation of mometasone concentration in human plasma after ointment application. Attempt has been made to study the skin penetration by measuring plasma level of mometasone in human. This method can also be used to study extent of absorption of new formulation of mometasone.

**Aim:** High Performance Liquid Chromatographic Method for Determination of mometasone furoate in human Plasma.

**MATERIALS AND METHODS**

**Materials**
1. Ethical clearance has been taken from institutional ethics committee.
2. Human plasma collected from MGM blood bank.
3. Place of study: Department of Pharmacology and OMICS research laboratory MGM medical college, Kamothe, Navi Mumbai.
4. Specific designed Performa were used to collect human blood plasma, storage and handling of plasma, serial dilution of mometasone furoate, mixing of plasma and serially diluted standard drug, stabilization of HPLC instrument, extraction of drug from plasma, processing of sample in HPLC and drawing of standard graph.
5. Mometasone furoate standard drug sample was purchased from sigma Aldrich methanol and water of HPLC grade were purchased from Merck specialities private LTD. All other reagents used were of analytical grade. Disodium Ethylenediamine tetra-acetic acid (EDTA) used for collection of blood, ethyl acetate used as protein precipitator purchased from S.D. Fine Chem LTD. Cooling centrifugation use for centrifugation

**Method**
Serial dilution: standard of mometasone furoate serially diluted and prepared 50 ng, 100 ng, 200 ng, 500 ng, 1 ug of dilutions.

Take 0.4 ml of standard drug from each dilution and mix in 1 ml of human plasma.

Extracting procedure: take 100 ul of from plasma (std drug + human plasma) add 1200 ul of extracting solvent ethyl acetate in eppendorf tube vertex mix for 2 min. centrifuged by
cooling centrifuge -6 0c at 6000rpm for 10 min. take supernatant evaporate volatile solvent
using simple evaporator at 40 0c. reconstituted the solid residue by 400 ul mobile phase.
Filter it and process in HPLC at 248 nm.

RESULT

Human plasma collected from MGM blood bank. Prepared different dilution of standard
drug mometasone furoate in human plasma. Follow standard procedure for extraction of drug
from plasma and processed in HPLC mobile phase methanol: water ( 88 : 12 ) %, wavelength
248 nm, flow rate 1 ml/min, retention time 3.5 min.

Gives area under curve (AUC) of different concentrations plotted a graph.

Table

<table>
<thead>
<tr>
<th>Concentration of drug</th>
<th>AUC</th>
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<tbody>
<tr>
<td>50 ng</td>
<td>2836</td>
</tr>
<tr>
<td>100 ng</td>
<td>6342</td>
</tr>
<tr>
<td>200 ng</td>
<td>12946</td>
</tr>
<tr>
<td>500 ng</td>
<td>25566</td>
</tr>
<tr>
<td>1 ug</td>
<td>55311</td>
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Graph
CONCLUSION
The proposed HPLC method is rapid, direct, specific, accurate, and precise for the determination of mometasone furoate in human plasma. The described method is suitable for routine analysis of mometasone furoate level in blood after topical, oral and injectable application.

REFERENCE