

K : $\frac{1}{2} \ln \frac{C_1}{C_2}$

I

...

...

Abstract

The purpose of this study was to evaluate the systemic bioavailability of intranasal fluticasone. The study was conducted in a randomized, double-blind, crossover design. The subjects were healthy volunteers who were administered intranasal fluticasone at a dose of 200 µg. The plasma concentrations of fluticasone were measured at various time points (0, 1, 2, 4, 8, 12, 24, 48, and 72 hours) after administration. The pharmacokinetic parameters, including the area under the curve (AUC), maximum concentration (C_{max}), and time to reach maximum concentration (T_{max}), were determined. The results showed that the systemic bioavailability of intranasal fluticasone was low, with a mean AUC of 0.12 µg·h/L and a mean C_{max} of 0.01 µg/L. The T_{max} was found to be 2 hours. The low systemic bioavailability is likely due to the high first-pass metabolism of fluticasone in the nasal mucosa and the liver.

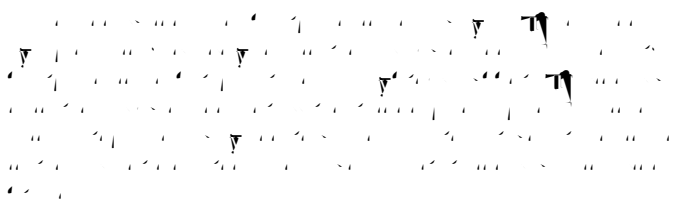
A a a a a

Introduction

Fluticasone is a corticosteroid used for the treatment of allergic rhinitis and asthma. It is available in various formulations, including intranasal sprays, inhalers, and oral tablets. The intranasal route of administration is preferred for the treatment of allergic rhinitis because it provides direct delivery to the site of action and minimizes systemic side effects. However, the systemic bioavailability of intranasal fluticasone is low, which may limit its effectiveness in the treatment of asthma. This study was conducted to evaluate the systemic bioavailability of intranasal fluticasone and to determine the pharmacokinetic parameters of this formulation.



C



A

C I

References

1. McLeod HL (1998) Clinically relevant drug-drug interactions in oncology. *Br J Clin Pharmacol* 45:539-544.
2. Ma J, Verweij J, Planting AS, Kolker HJ, Loos WJ, et al. (1996) Docetaxel and paclitaxel inhibit DNA-adduct formation and intracellular accumulation of cisplatin in human leukocytes. *Cancer Chemother Pharmacol* 37:382-384.
3. Ando M, Saka H, Ando Y, Minami H, Kuzuya T, et al. (2005) Sequence effect of docetaxel and carboplatin on toxicity, tumor response and pharmacokinetics in non-small-cell lung cancer patients: a phase I study of two sequences. *Cancer Chemother Pharmacol* 55:552-558.
4. Jiang S, Pan AW, Lin TY, Zhang H, Malfatti M, et al. (2015) Paclitaxel Enhances Carboplatin-DNA Adduct Formation and Cytotoxicity. *Chem Res Toxicol* 28:2250-2252.
5. Cadavid AP (2017) Aspirin: The Mechanism of Action Revisited in the Context of Pregnancy Complications. *Front Immunol* 8:261.
6. Pelkonen O, Pasanen M, Lindon JC, Chan K, Zhao L, et al. (2012) Omics and its potential impact on R&D and regulation of complex herbal products. *J Ethnopharmacol* 140:587-593.
7. Zhu X, Shen X, Qu J, Straubinger RM, Jusko WJ (2018) Multi-Scale Network Model Supported by Proteomics for Analysis of Combined Gemcitabine and Birinapant Effects in Pancreatic Cancer Cells. *CPT Pharmacometrics Syst Pharmacol* 7:549-561.
8. Wang X, Niu J, Li J, Shen X, Shen S, et al. (2018) Temporal Effects of Combined Birinapant and Paclitaxel on Pancreatic Cancer Cells Investigated via Large-Scale, Ion-Current-Based Quantitative Proteomics (IonStar). *Mol Cell Proteomics* 17:655-671.
9. Quail DF, Joyce JA (2013) Microenvironmental regulation of tumor progression and metastasis. *Nat Med* 19, 1423–1437.
10. Jilek BL, Zarr M, Sampah ME, Rabi SA, Bullen CK, et al. (2012) A quantitative basis for antiretroviral therapy for HIV-1 infection. *Nat Med* 18:446-451.
11. Castiglione F, Pappalardo F, Bernaschi M, Motta S (2007) Optimization of HAART with genetic algorithms and agent-based models of HIV infection. *Bioinformatics* 23:3350-3355.
12. Huang SM, Temple R, Throckmorton DC, Lesko LJ (2007) Drug interaction studies: study design, data analysis, and implications for dosing and labeling. *Clin Pharmacol Ther* 81:298-304.
13. Barbaro G, Scozzafava A, Mastrolorenzo A, Supuran CT (2005) Highly active antiretroviral therapy: current state of the art, new agents and their pharmacological interactions useful for improving therapeutic outcome. *Curr Pharm Des* 11:1805-1843.