Mechanisms Responsible for Different Rates of Uptake of Mizoribine and Ribavirin by Human Epithelial LS 180 Cells

Introduction

In Fig. 1A it was observed that the uptake of Mizoribine and Ribavirin by human epithelial LS 180 cells is different. The graph in Fig. 1A shows the time course of the uptake of Mizoribine and Ribavirin into the cells. The uptake of Mizoribine is much higher than that of Ribavirin. This difference is likely due to the different mechanisms of transport across the cell membrane.

Key words: Mizoribine, Ribavirin, human epithelial LS 180 cells, mechanisms of transport.

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Fig. 1. Structure of Ribavirin (A) and Mizoribine (B).

Materials and methods

1. Materials

- Ribavirin (123) and Mizoribine (124) were obtained from Sigma-Aldrich.
- All other chemicals were obtained from standard commercial sources.

2. Cell Culture

- The LS 180 cell line was cultured in RPMI 1640 medium supplemented with 10% fetal bovine serum.

3. Cellular Uptake of Ribavirin and Mizoribine in LS 180 Cells

- The uptake of Ribavirin and Mizoribine was measured using a fluorescence spectroscopy method. The results are presented in Fig. 1.
Results

1. Uptake of Ribavirin and Mizoribine in LS 180 Cells

Pharmacokinetic studies of the uptake of ribavirin and mizonoribine in LS 180 cells were performed. Fig. 2A shows the uptake of ribavirin and mizonoribine in LS 180 cells at different concentrations. The uptake of ribavirin and mizonoribine was dose-dependent. Fig. 2B shows the uptake of ribavirin and mizonoribine in LS 180 cells at different concentrations. The uptake of ribavirin and mizonoribine was dose-dependent.

2. C/M Ratio of Ribavirin and Mizoribine in LS 180 Cells at Steady State

Pharmacokinetic studies of the C/M ratio of ribavirin and mizonoribine in LS 180 cells were performed. Fig. 3 shows the C/M ratio of ribavirin and mizonoribine in LS 180 cells at different concentrations. The C/M ratio of ribavirin and mizonoribine was concentration-dependent.

4. Statistical Analysis

Statistical analysis was performed to determine the significance of the differences in drug uptake and C/M ratio. The results were analyzed using ANOVA and post hoc tests. The significance level was set at p < 0.05.
3. Effect of Extracellular Na\(^+\) on the C/M Ratio of Ribavirin and Mizoribine in LS 180 Cells

Fig 3.

4. Effect of Inhibitors of Efflux Transporter on the C/M Ratio of Ribavirin and Mizoribine in LS 180 Cells

Fig 4.

Discussion

Fig 5.

Fig 6.
**Fig 6.**

The figure illustrates the ratio of CM (cell membrane) in the control group and the experimental groups treated with pantothenate and DHEAS. The bars represent the mean ± standard error of the mean (SEM) for each group. The asterisks denote statistically significant differences (*p < 0.05) compared to the control group.

![Graph showing CM ratio](image)

**References**

1. ABCG 2 (BCRP) 421C > A
3. CNT 1 565 G > A
5. Transplant. Proc 2018