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Characterization of novel lornoxicam liquitablets: In vitro permeability, cytotoxicity, and stability evaluation

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Lornoxicam, a potent nonsteroidal anti-inflammatory drug, is commonly used to manage pain and inflammatory conditions. However, its poor aqueous solubility limits therapeutic efficacy by causing variable and delayed absorption, alongside gastrointestinal risks from conventional oral formulations. Liquitablets, an innovative dosage form, address these issues to enhance bioavailability.

The objective of this study was to assess the *in vitro* permeability, cytotoxicity, and stability of optimized lornoxicam liquitablets.

Apparent permeability coefficients (Papp) were determined for the formulated liquitablets [1]. Cytotoxicity was evaluated in Caco-2 cells using the MTT assay (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide). Stability was tested in a desiccator at 25 ± 2 °C/50 ± 5% relative humidity, simulating ambient conditions; tests included drug content determination and structural analyses via X-ray powder diffraction (XRPD), differential scanning calorimetry (DSC), and thermogravimetric analysis (TGA) at 0, 3, and 6 months. In addition to dissolution studies in pH 1.2 medium.

In vitro permeability testing revealed a statistically significant increase in the apparent permeability coefficient (Papp) relative to the pure lornoxicam ($p < 0.05$). MTT assay revealed no significant reduction in cell viability at therapeutic concentrations. After storage drug content remained >98%.

In conclusion, these findings establish lornoxicam liquitablets as a stable, rapidly dissolving, and permeable formulation with favourable safety profile supporting its potential as an effective and patient-centric oral dosage form for rapid action.

References:

1. Balla-Bartos C., Gamiel A., Motzwickler-Németh A., Ambrus R. Pharmaceutics 17, 1096 (2025).

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