

Medication Analysis Report

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Analysis System: MedicationAnalyzer (Comprehensive Drug Analysis)

Analysis Cost: \$0.3393

Duration: 451.2s

Medication Overview

Name:

lactoferrin

Drug Class: Lactoferrin is classified as an iron-binding glycoprotein and immunomodulatory agent. Therapeutically, it functions as a nutritional supplement, antimicrobial protein, and immunomodulator. It belongs to the transferrin family of iron-binding proteins.

Analysis Confidence: 0.75/1.00

Mechanism of Action

Lactoferrin exerts multiple mechanisms at the molecular level: (1) Iron sequestration - binds ferric iron (Fe^{3+}) with high affinity ($K_d \sim 10^{-20} \text{ M}$), depriving pathogens of essential iron for growth; (2) Direct antimicrobial activity - binds to lipopolysaccharides (LPS) on bacterial membranes causing ...

Pharmacokinetics Summary

- **Absorption:** Oral bioavailability of intact lactoferrin is low (approximately 1-5% in adults) due to gastric acid...
 - **Metabolism:** Lactoferrin undergoes proteolytic degradation by pepsin in the stomach and pancreatic proteases (try...
 - **Elimination:** Primary route of elimination is through gastrointestinal degradation and fecal excretion of unabsorb...
 - **Half-Life:** The elimination half-life of orally administered lactoferrin is approximately 2-4 hours for detectable peptide fragments in plasma. For intact lactoferrin following intravenous administration in animal studies, the half-life ranges from 5-15 minutes due to rapid hepatic uptake and tissue distribution. Biological activity in the gastrointestinal tract persists for 6-12 hours post-administration due to gradual proteolytic degradation and local effects.
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Key Safety Information

Interactions Summary

Moderate Drug Interactions (4)

- **Fluoroquinolone antibiotics (ciprofloxacin, levofloxacin, moxifloxacin):** Decreased fluoroquinolone bioavailability by up to 50-90%, potentially resulting...

- **Tetracycline antibiotics (doxycycline, minocycline, tetracycline):** Reduced tetracycline absorption and serum concentrations, potentially compromisi...
 - **Levothyroxine:** Decreased levothyroxine absorption leading to reduced thyroid hormone levels and...
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Evidence-Based Recommendations

For complete details including all interactions, dosing adjustments, and comprehensive recommendations, see the detailed report.

DISCLAIMER:

This analysis is for educational and research purposes only. Always consult qualified healthcare providers for medication decisions.