

Medication Analysis Report

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Analysis System: MedicationAnalyzer (Comprehensive Drug Analysis)

Analysis Cost: \$0.0397

Duration: 33.3s

Medication Overview

Name:

Paracetamol

Drug Class: Non-opioid analgesic and antipyretic

Analysis Confidence: 0.95/1.00

Mechanism of Action

Paracetamol selectively inhibits cyclooxygenase (COX-2 and COX-3) enzymes in the central nervous system, reducing prostaglandin synthesis responsible for pain and fever. It exhibits minimal peripheral anti-inflammatory activity compared to NSAIDs. Additional mechanisms include activation of descendi...

Pharmacokinetics Summary

- **Absorption:** Paracetamol is rapidly absorbed from the small intestine with bioavailability of 70-90% due to first...
 - **Metabolism:** Hepatic metabolism predominates: 50-60% glucuronidation, 25-35% sulfation, 5-10% CYP2E1-mediated oxi...
 - **Elimination:** Primarily renal excretion of metabolites (glucuronide 55%, sulfate 30%, cysteine/mercapturic acid 10...)
 - **Half-Life:** 1-4 hours (mean 2-3 hours) in healthy adults; prolonged to 5-8 hours in hepatic impairment, neonates, or malnutrition. Therapeutic range monitoring uses Rumack-Matthew nomogram in overdose.
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Key Safety Information

BLACK BOX WARNINGS

1. Severe liver injury may occur with therapeutic doses exceeding 4000 mg/day or lower in risk factors (alcohol, malnutrition); check total daily dose from all sources.
2. Overdosage (>7.5-10 g acute) risks fulminant hepatic failure requiring transplant; antidotal therapy with N-acetylcysteine within 8-24 hours critical.
3. Risk increased 3-4 fold with chronic alcohol use (>3 drinks/day).

Contraindications (4 identified)

- **N/A** (N/A)
- **N/A** (N/A)
- **N/A** (N/A)

- (and 1 more - see detailed report)
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Interactions Summary

SEVERE Drug Interactions (1)

- **Chronic alcohol**
- Effect: Hepatotoxicity at therapeutic doses....
- Management: Limit to 2000 mg/day; counsel abstinence....

Moderate Drug Interactions (2)

- **Warfarin:** Elevated INR, bleeding risk....
- **Carbamazepine:** Decreased efficacy; risk compensatory overuse....

Food Interactions (2)

- **High-fat meals:** Administer 30 min before meals if rapid onset needed....
 - **Alcohol (acute/chronic):** Avoid concurrent use; separate by >6 hours if unavoidable....
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Recommendations

What TO DO:

1. N/A

- Prevents inadvertent overdose; multi-source use causes 30-50% of hepatotoxicity cases....

2. N/A

- Replenishes glutathione; survival >95% if <8 hours post-ingestion....

3. N/A

- Prolonged half-life increases accumulation; RCTs show safety up to 3 g/day....

What NOT TO DO:

1. Do not exceed 4000 mg/day total from all formulations.

- N/A...

2. Avoid concurrent 3+ alcoholic drinks daily.

- N/A...

3. Do not use extended-release with immediate-release concurrently.

- N/A...

Debunked Claims:

1. Paracetamol is safe with moderate alcohol (1-2 drinks/day).

- Induces CYP2E1 even with moderate intake per pharmacokinetic studies....

2. Paracetamol cures the common cold or flu.

- Symptomatic relief only; no antiviral activity per RCTs....

3. Daily paracetamol prevents headaches indefinitely.

- Risks medication-overuse headache after 10-15 days/month....
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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.