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A Systematic Review On Pharmacokinetic, Pharmacodynamic, Interaction with Other Drugs, Toxicity and Clinical Effectiveness of Proton Pump Inhibitors (PPI)

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Abstract: *The most effective category of medicines for treating acid-related intestinal conditions are proton pump inhibitors, or PPIs. The mechanism of action, pharmacokinetics, pharmacodynamics, drug interactions, toxicity, and clinical efficacy of two commonly given PPIs—omeprazole and pantoprazole—are the main topics of this review. The final stage of gastric acid production is blocked by both medications' irreversible inhibition of the H^+/K^+-ATPase enzyme on the stomach parietal cells, which results in a long-lasting reduction of both baseline and enhanced acid output. Pantoprazole has more bioavailability and fewer clinically relevant medication interactions than omeprazole, which is highly binding to proteins and extensively processed by hepatic cytochrome P450 enzymes. Whenever it comes to managing GERD, peptic ulcer disease, Zollinger-Ellison syndrome, NSAID-induced ulcers, and Helicobacter pylori eradication therapy, both PPIs are effective.Prolonged therapy may result in adverse effects such as vitamin B12, calcium, magnesium, and iron deficiencies, increased fracture risk, kidney damage, and increased susceptibility to infections, even though it is generally safe for short-term use. Pantoprazole has a lower probability for interaction and an unusually favorable safety profile.*

Keywords: Proton Pump Inhibitors, Omeprazole, Pantoprazole, Gastric Acid Suppression, GERD, Peptic Ulcer Disease, Pharmacodynamics, Pharmacokinetics, Drug Interactions, Long-term Safety

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