Cyclooxygenase-1 inhibitor

A cyclooxygenase-1 (COX-1) inhibitor is a type of nonsteroidal anti-inflammatory drug (NSAID) that selectively or non-selectively inhibits the COX-1 enzyme. COX-1 is responsible for producing prostaglandins that help maintain the normal lining of the stomach, support kidney function, and aid in platelet aggregation (blood clotting).

Examples of COX-1 Inhibitors

Aspirin – Irreversibly inhibits COX-1 and COX-2, used for its anti-inflammatory, analgesic, antipyretic, and antiplatelet effects. Ketoprofen – A non-selective NSAID with stronger COX-1 inhibition than COX-2, used for pain and inflammation. Indomethacin – A potent NSAID that inhibits both COX-1 and COX-2 but has a significant impact on COX-1, commonly used for rheumatoid arthritis and gout. Piroxicam – Another non-selective NSAID that inhibits COX-1 more than COX-2, used for osteoarthritis and rheumatoid arthritis. Effects of COX-1 Inhibition: Reduced inflammation, pain, and fever (therapeutic effect). Increased risk of gastrointestinal ulcers and bleeding (due to reduced gastric mucosal protection). Potential kidney impairment (due to reduced prostaglandin-mediated renal function). Reduced platelet aggregation, which can prevent blood clots (beneficial in cardiovascular diseases but increases bleeding risk). Selective COX-1 Inhibitors Selective COX-1 inhibitors are less common because most NSAIDs inhibit both COX-1 and COX-2 to varying degrees. However, aspirin at low doses (e.g., 81 mg daily) is often used selectively for its antiplatelet effects in cardiovascular protection.