NSAIDs

Nonsteroidal anti-inflammatory drugs are anti-inflammatory, analgesic and antipyretic agents. Many drugs fall into this drug family including ibuprofen, naproxen, indomethacin, ketorolac and aspirin among many others. They work through reversible inhibition of COX-1 and COX-2, which blocks prostaglandin synthesis, along with thromboxane and prostacycline synthesis. While helping decrease inflammation, pain, fever and platelet aggregation, side effects such as renal ischemia, interstitial nephritis and gastric ulcers occur.



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Indications

Anti-inflammatory
Ant-tie-fire-extinguisher
It is believed that its inhibition of COX-2 results in anti-inflammatory effects.

Analgesic
A-nail-Jay-Z
It is believed to have pain-killing effects due to its inhibition of both COX-1 and COX-2.

Fever
Fever-beaver
It is believed to reduce fever via blockage of Prostaglandin E2 (PGE₂) via inhibition of COX.

Closure of Patent Ductus Arteriosus
Closing-door of Duck-Archer
Prostaglandin E1 (PGE₁) is responsible for patency of the ductus arteriosus. The NSAID indomethacin is given to block PGE₁ and close the PDA.

Mechanism of Action

Reversible Inhibition of COX-1 and COX-2
Reversing with Inhibiting-chains on Cock with (1) Wand and Cock in (2) Tutu
NSAIDS reversibly inhibit COX-1 and COX-2 and results in inhibition of production of prostaglandins (PG) and thromboxanes (TX). Each NSAID has small differences in COX-1 and COX-2 inhibition.

Block Prostaglandin Synthesis
Blocking P-rasta Assembly
Through inhibition of COX, endoperoxides cannot turn into prostaglandins (PGs). This prevents PGs from performing their role in inflammatory responses, pain processing and fever production.

Side Effects

Interstitial Nephritis
Interstate Kidney-on-fire
This drug reaction can result in acute or chronic interstitial nephritis characterized by fever, rash, hematuria and CVA tenderness.

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Gastric Ulcer

Gas Ulcer-volcano

Prostaglandins (PGs) produced by COX-1 help maintain the protective GI mucosal barrier in the stomach and intestines. Blockage of these PGs via COX-1 inhibition can result in gastric ulcers.

Renal Ischemia

Kidney Eye-ski-mask

NSAIDS inhibit vasodilatory prostaglandins (PGs) which can result in decreased renal blood flow and renal damage.