Aspirin

Also known as acetylsalicylic acid, aspirin is an anti-inflammatory, antipyretic, analgesic and antiplatelet drug. It is classified as an NSAID; however, its mechanism of action differs from other NSAID’s because it irreversibly inhibits COX-1 and COX-2 in comparison with other NSAID’s, which reversibly inhibit COX-1 and COX-2.

PLAY PICMONIC

Indications

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

Pain and Headache
Pain-bolt and Head-egg-lump
It is believed to have pain-killing effects due to its inhibition of both COX-1 and COX-2.

Cardiovascular Disease (CAD)
Heart Diseased
Due to its antiplatelet effects, aspirin has been demonstrated to be effective for prevention of MI and ischemic stroke in those with existing cardiovascular disease (CVD) and those without CVD.

Mechanism of Action

Irreversible inhibition of COX-1 and COX-2
Locked Inhibiting-chains on Cock (1) Wand and Cock (2) Tutu
Aspirin irreversibly inhibit COX-1 and COX-2 and results in inhibition of production of prostaglandins (PG) and thromboxanes (TX).

Suppress Thromboxanes and Prostaglandins
Suppressing Trombone-axes and P-rasta
This prevents PGs from performing their role in inflammatory responses, pain processing and fever production and TXs from causing platelet aggregation.

NSAID
N-sad
Aspirin is classified as an NSAID but it performs irreversible, not reversible inhibition of COX-1 and COX-2.

Side Effects

Reye's Syndrome
Rays from aspirin bottle
Administration of aspirin to children with viral infection is associated with microvesicular steatosis of hepatocytes, hepatoencephalopathy and potentially death. Causality has not yet been established.

Tinnitus

Tennis-ball-ringing-ear

Chronic aspirin toxicity can occur in individuals chronically taking 3g or more daily. This may result in ringing in the ears (tinnitus) possibly due to activation of cochlear NMDA receptors.

Peptic Ulceration

Gas Ulcer-volcano

PG’s produced by COX-1 help maintain the protective GI mucosal barrier in the stomach and intestines. Blockage of these PG’s via COX-1 inhibition can result in gastric ulcers.

Mixed Acidosis/Alkalosis

Acidic-lemon and Elk-loser

Aspirin toxicity can result in initial respiratory alkalosis due to hyperventilation and then metabolic acidosis. This presents as a mixed respiratory alkalosis and metabolic acidosis.

Nephropathy

Wavy-kidney

Aspirin can cause renal ischemia due to decreased renal blood flow, renal papillary necrosis or interstitial nephritis (acute or chronic).