Acetaminophen

Acetaminophen (Tylenol) is an antipyretic and analgesic drug that lacks the anti-inflammatory and anti-platelet effects seen with aspirin and NSAIDs. It works by reversibly inhibiting COX and the hypothalamic thermoregulation center in the CNS.



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Indications

Fever
Fever-beaver
Acetaminophen is very useful in treating fever, and is typically given to children instead of aspirin as an antipyretic. This is done in order to prevent the development of Reye's syndrome.

Pain
Pain-bolt
Acetaminophen helps relieve pain. It works similarly to aspirin and other NSAIDs.

Mechanism of Action

Reversibly Inhibits COX
Reversing with Inhibiting-chains on Cock
The mechanism of action remains unknown, however, it is hypothesized its analgesic mechanism of action results from its reversible inhibition of the cyclooxygenase (COX) pathway in the CNS. This drug may also activate descending inhibitory pathways.

Acts Primarily in CNS
CNS-brain
Studies have shown that acetaminophen acts primarily in the CNS, allowing it to be useful for fever and headache. The antipyretic properties of acetaminophen are likely due to direct action on the hypothalamic thermoregulation center resulting in peripheral vasodilation and sweating. This is also proposed as an explanation for its lack of peripheral anti-inflammatory effects.

Side Effect

Hepatic Necrosis
Liver Necrosis-crow
5% of acetaminophen is metabolized via CYP enzymes to NAPQI, which is conjugated with glutathione. If high doses of acetaminophen are taken, NAPQI accumulates and causes centrilobular hepatic necrosis due to binding and damage to hepatic proteins and increased susceptibility to reactive oxygen species.

N-acetylcysteine Antidote
N-seagull-Sistine
This is a glutathione precursor that when given can help result in conjugation of NAPQI. The Rumack-Matthew nomogram is used to determine whether treatment with N-AC is required and N-AC can be given within 8 hours of acetaminophen ingestion.

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