Acetaminophen Antidote

Acetaminophen is one of the most widely used pharmaceutical analgesic and antipyretic agents in the United States and worldwide. Acetaminophen is rapidly absorbed from the stomach and small intestine and primary metabolized by conjugation in the liver to nontoxic, water-soluble compounds that are eliminated in the urine. In acute overdose, metabolism by conjugation becomes saturated and excess acetaminophen is oxidatively metabolized by CYP enzymes to the reactive metabolite NAPQI. NAPQI has an extremely short half life and is rapidly conjugated with glutathione and renally excreted. When there is excessive NAPQI formation or a reduction in glutathione stores, NAPQI covalently binds to cysteinyl sulfhydryl groups of hepatocellular proteins causing a cascade of oxidative damage and mitochondrial dysfunction. This inflammatory response propagates hepatocellular injury, death, and centrilobular (zone III) liver necrosis. The antidote for acetaminophen poisoning is N-acetylcysteine (NAC) which is a precursor of glutathione among other mechanisms.

PLAY PICMONIC

Antidote

N-Acetylcysteine

N-seagull-Sistine

Replenishes glutathione which allows reactive intermediates of acetaminophen biotransformation to become nontoxic.