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April-June 2022

DOI: [10.21276/2395-2466.22.10.0081](https://doi.org/10.21276/2395-2466.22.10.0081)

International Journal of
CHEMICAL AND PHARMACEUTICAL
ANALYSIS

eISSN: 2348-0726 ; pISSN : 2395-2466

Opinion Article

Volume-10

Issue-2

Article ID: 0081

DAILY DOSAGES OF ACETAMINOPHEN IN ADULTS AND CHILDREN

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Received: 01-Jun-2022, Manuscript No. IJCPA-22-66708; **Editor assigned:** 06-Jun-2022, PreQc No. IJCPA-22-66708(PQ); **Reviewed:** 20-Jun-2022, QC No. IJCPA-22-66708; **Revised:** 28-Jun-2022, Manuscript No. IJCPA-22-66708(R); **Published:** 05-Jul-2022; DOI:10.21276/2395-2466.22.10.0081

DESCRIPTION

The maximum daily adult intake of acetaminophen has usually been 4 g, with a suggested dose of 352-650 mg in every 4-6 hours or 1 g every 6 hours. McNeil Consumer Healthcare, the maker of Tylenol, has voluntarily cut the maximum recommended daily adult dose of its 500 mg tablet product to 3 g and its standard strength 325 mg tablet to 3250 mg.

The maximum daily dose for children younger than 12 years old or weighing less than 50 kg is 75 mg/kg, with a recommended dosage of 10-15 mg/kg every 4-6 hours as needed and no more than 5 doses in a 24 hour period. Weight-based rectal suppository dosing for children is higher, at 15-20 mg/kg each dose, using the same time interval as for oral acetaminophen, due to absorption variances.

Etiology

In acetaminophen overdose, the production of NAPQI by the CYP system in proportions greater than can be conjugated with existing glutathione stores is the cause of liver toxicity. Conditions that deplete glutathione stores in the body, such as the following, increase susceptibility:

- Getting older
- Dietary restrictions
- Hepatic or renal disease is present
- Nutritional status is compromised
- Furthermore, stimulation of the hepatic cytochrome system increases NAPQI synthesis (and thus the risk of hepatocellular damage). Medications and agents that induce CYP enzyme activity are numerous, and include some of the following:
 - Ethanol ingestion
 - Tobacco smoking
 - Isoniazid (INH)

- Rifampin
- Phenytoin
- Phenobarbital
- Barbiturates
- Carbamazepine
- Trimethoprim-sulfamethoxazole (TMP-SMZ)
- Zidovudine

Minimum toxic acetaminophen dosages

The hazardous dose of acetaminophen for a single consumption in adults is 7.5 g-10 g. For a single acute consumption of APAP in children, the minimal hazardous dose is 150 mg/kg. Medical toxicologists advocate raising this threshold to 200 mg/kg in healthy children aged 1-6 years. Hepatotoxicity from acute acetaminophen ingestion is less likely in children this age group. Differences in drug metabolism within this age group, as well as a slightly higher liver mass (ie, the ratio of organ weight to total body weight), may both contribute to NAPQI detoxification and elimination efficiency.

Toxic acetaminophen dosages

Acute acetaminophen ingestion of more than 150 mg/kg (12 g) in humans is considered a dangerous amount, posing a serious risk of liver damage. Acute acetaminophen intake of 250 mg/kg or higher in children provides a significant risk of hepatotoxicity. If not handled adequately, children who consume more over 350 mg/kg risk developing severe hepatotoxicity. The FDA announced in 2009 that nonprescription and prescription drugs would be required to disclose new information about acetaminophen-induced hepatotoxicity. The FDA considered whether acetaminophen should be removed from some common analgesic combo medications.

CONCLUSION

The effect of fasting, reduced glutathione reserves and increased metabolism in chronic acetaminophen toxicity is unknown. Risk factors for chronic acetaminophen toxicity include the following:

- Repeated administration of high doses
- Repeated administration of proper doses at shortened time intervals
- Fever
- Poor oral intake
- Young age

Pediatric children have been shown to have chronic acetaminophen toxicity. This disorder affects young, febrile children with poor oral intake who are given high doses of acetaminophen repeatedly to alleviate their symptoms. Children should not take more than 75 mg/kg/d of acetaminophen in a 24 hour period.