

Natural protection for frequent, but mostly unknown health risk

Many people think that drugs that you can buy without a prescription, especially pain killers must be completely safe. However, acetaminophen, a common drug used in painkiller and anti-fever medications has dangerous side effects that most of us are not aware of. On the list of drugs linked most closely to death acetaminophen is No.5. Our research team has published this year a new study showing that natural substances can offer protection against toxicity of this commonly used drug.

It is important to identify the drugs containing this toxin

It is quite common for people to take too much acetaminophen, which is sold under different brand names, such as Tylenol, Panadol, Anacin and others. In addition, this chemical compound can be found in numerous products (more than 100 are available without a prescription) and you might not even realize you are taking it. If, for instance, you are taking the recommended doses of a medication for menstrual cramps (i.e., Midol, Pamprin), another one for cold or flu (i.e., Benadryl, Contac, Sinutab), then add to it Extra Strength Tylenol for headache or arthritis pain and you may end up with serious health consequences. Each of these different products contain acetaminophen, a powerful toxin causing liver and kidney damage, because the therapeutic dose used in humans is very close to the toxic dose.

The first cases linking acetaminophen to liver toxicity were reported in the 1980s. More than 20 years have passed since then with many more toxicity cases reported. Between 1998 and 2003, the percentage of acute liver failure linked to the drug almost doubled from 28% to 51%. Where are the warning labels? Where are the measures to improve acetaminophen drugs safety?

Although about 50 million people in the US take some form of acetaminophen for pain each week, the FDA heavily influenced by the drug lobby is not eager to change anything. However, even simple measures can help. For instance, a regulation introduced in the UK, which requires packing acetaminophen pills in blister-packs instead of selling loose pills in a bottle and amounts per sale limited to 16 grams, made it less likely for people to overdose and in a few years significantly reduced the number of liver poisoning, liver transplants and death. Good results for people, but not for the drug business, because during that time sales of these products dropped from \$123 billion to \$84 billion. It is not surprising that drug manufacturers are not eager to support this approach in other countries.

How does acetaminophen work?

Acetaminophen dissolves in the stomach and after reaching the blood stream it is carried to the liver for detoxification. There it undergoes a series of metabolic conversions that lead to the formation a metabolic product that is very toxic to liver cells. If an acetaminophen dose is low our body can neutralize this harmful substance with the help of an antioxidant, glutathione. However, if a large dose of acetaminophen is ingested, it can deplete glutathione in the liver leading to damage of this organ that can be manifested in as little as 5 days. In adults, liver damage can occur with a dose exceeding 10 to 15 grams; taking more than 25 g can be fatal. Even a low acetaminophen dose taken for a long time decreases functional capacity of the liver and also damages the kidneys. In people who have kidney disease this can lead to death.

The risk of adverse effects increases when acetaminophen is taken with alcohol (more than 2-3 drinks a day) or by people who are unable to eat due to nausea, vomiting, loss of appetite, anorexia, malnutrition or fasting. Earlier, in a separate article we discussed the issues associated with children taking acetaminophen.

Our research provides the answers

Conventional medicine treats acetaminophen-induced liver toxicity by administering N-acetyl-cysteine, which is a natural precursor of glutathione and therefore helps in restoring glutathione supply in the liver. This measure is applied when liver or kidney toxicity has already occurred and it requires intravenous administration or supplementing with high doses of N-acetyl-cysteine orally in the hospital setting.

Why so late? Why do patients who suffer chronic pain and take acetaminophen-containing medication routinely not know that they can naturally protect their liver from poisoning it by a drug?

N-acetyl-cysteine, although safe, is not available without a prescription in many countries (do you think it is for YOUR protection?). Also, it has an unpleasant taste and smell and many people are reluctant to take it. Our research team has been interested in finding out whether combining N-acetyl-cysteine with specific vitamins and micronutrients can generate a synergistic effect in protecting the liver and kidneys against damage from acetaminophen. Synergy has its advantage over a single component because it does not require high doses of nutrients and it has complex and wide reaching physiological effects.

What we have found is very promising. The results of our work was published this year in the scientific journal *Human & Experimental Toxicology* (2008; 27;223-230) and you can easily access full text of this scientific publication on our research website (www.drrathresearch.org).

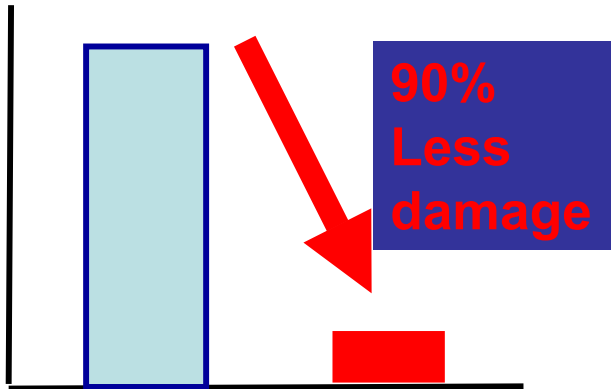
Our research shows that a low dose of N-acetyl-cysteine, combined with vitamin C, green tea extract, lysine, proline, arginine and other nutrients, provided a significant protection to the liver and kidneys of mice when taken in a diet for two weeks before the exposure to a toxic dose of acetaminophen. To assess liver damage we measured the blood levels of enzymes: alanine aminotransferase (ALT), aspartate aminotransferase (AST), and alkaline phosphatase. These enzyme are released to the blood stream when the liver cells are damaged, therefore, their elevated level indicates the magnitude of cell destruction, organ necrosis and inflammation. In mice exposed to acetaminophen, there was a dramatic increase in all these enzymes in the blood. However in mice, which were exposed earlier to this nutrient mixture in the diet the secretion of these enzymes decreased to almost control levels. This indicates that damage of cell structures caused by acetaminophen was neutralized by this nutrient combination and that the liver cells remained viable (please see the chart). Similar effects of the nutrient mixture were seen in protecting the kidneys against toxic doses of acetaminophen.

These findings clearly show that there is a real possibility of shielding the liver and kidneys from acetaminophen toxicity by incorporating these natural components in the diet.

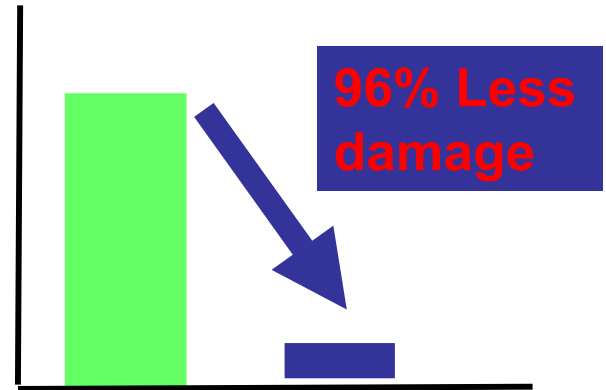
Dr. Aleksandra Niedzwiecki
Dr. Rath Research Institute
California, USA

Nutrients protect the liver against damage caused by paracetamol or tylenol

AST- asparagine amino- transferase



ALT – alanine transferase



Acetaminophen	+	+
Nutrient Synergy	-	+

+	+
-	+