The Natural Cleanser

Acetone is an interesting substance that evokes many different responses because most folks do not really know what it is. Most might relate to it as the smelly ingredient in nail polish removers. Others might remember that it was the name of a California rock band that toured with The Verve in the 90’s. But they all might be surprised to hear that this natural substance is simply something they constantly encounter from nature— in the air they breathe and even from the acetone produced daily in their own bodies.
For those in the science world, however, acetone is well understood and appreciated for all of the contributions it makes to organic chemistry both in the laboratory and in the human body!

Setting the Record Straight about Acetone

Acetone

Acetone is an indispensable compound that serves as a building block whether in the body or in an organic chemistry lab.

- The main reason why the acetone molecule is not considered a toxin is because it is made by our bodies as part of normal human metabolism.
- And the main reason it is used in dermatological practice/products is because it is an ingredient that has a great reputation for safety.

Acetone – made in our body

In the human body, acetone is known as a ketone body. It is one of three that is naturally produced through normal metabolism in the liver. Our bodies use ketones, such as acetone, as an important source of energy. Ketones are especially useful during strenuous exercise and when folks go on low carbohydrate diets for weight loss or they practice fasting. These situations lead to low amounts of glucose (blood sugar), the common energy fuel. Without enough fuel to meet its energy needs, the body must increase fat breakdown in order to generate more ketones as fuel. So, we can intentionally increase our production of acetone to help reduce excess body fat.

Even the brain uses ketones for energy if it has to, but it would rather use them for creating vital brain lipids. Normally, the brain only uses glucose for energy, but during starvation ketones can become the main energy source.

In fact, medical practitioners recommend a ketogenic diet to increase acetone for the control of epilepsy in children because acetone is anticonvulsive without being toxic. Any acetone that is not needed by the body will end up in the urine as waste or exhaled out of the lungs in breath. It’s been shown that pregnant and nursing mothers and children make higher levels of acetone in their bodies because their energy needs are greater. Some diabetics might produce very high levels of ketones if their blood sugar is not managed well and this excess acetone can be detected on their breath as a “sweet and fruity” odor as their bodies try to normalize.
Acetone - made in the Lab

Acetone is widely used as an industrial solvent that dissolves things and keeps them in solution. It is a safer choice than other solvents. It does not cause adverse effects on health or the environment at levels found ordinarily in the workplace. It’s interesting that roughly 97% of the acetone released into our atmosphere comes from nature as decaying vegetation and natural forest fires. We encounter acetone through air, food, and water – it is virtually everywhere! Acetone has every day uses in medicine. Dermatologists around the world use acetone to cleanse the skin because it removes oil and debris on the skin that can hide “bad” bacteria. Acetone is inherently safe and more effective than alcohol for cleansing the skin before treatments or procedures.

Acetone is also an ingredient often found in consumer products such as cosmetics and foods. As such, acetone is rated as a GRAS (Generally Regarded As Safe) substance that is present in foods such as beverages, baked goods, preserves and desserts. One extensive study on childhood exposures to acetone from products such as nail polish remover, spray paint, and spot removers, reported that acetone is not likely to pose a significant health risk and that 90% of acetone found in children was naturally produced in their bodies. The researchers determined that the rest of the acetone came mainly from natural food sources such as human breast milk, grapes, tomatoes, beans, dairy, cauliflower and onions.

Unfortunately, some consumer products also contain known harmful substances such as phthalates, aldehydes (formaldehyde /acetaldehyde), benzene and toluene that may be found in formulas along with acetone.

Although acetone is safe, an un-informed person might assume acetone is toxic. This “guilt-by-association” concept has led to a sad misunderstanding of acetone. Acetone has been extensively studied and is recognized by regulatory agencies to have low acute and chronic toxicity if ingested or inhaled. Based on studies, these agencies do not regard or classify acetone as a carcinogen, mutagen, neurotoxin or genotoxin. Even at very high concentrations, irritating effects were shown to be reversible – we simply excrete more acetone with elevated exposures. The EPA (Environmental Protection Agency) conducted an extensive review of the available toxicity data on acetone and verified its low potential to toxicity in chronic studies.

Acetone in Skincerity

CLINICAL QUESTIONS AND ANSWERS

1) If acetone evaporates off of the skin how is it a part of the delivery system?
Acetone keeps the polymer “film” masque in a liquid form while it is in the bottle. It is the activating agent that turns the liquid into a film when the liquid touches the skin and the acetone evaporates away. The acetone in Skincerity evaporates too quickly to be absorbed through the skin.

2) What is the delivery system?
The delivery system is a roller-ball bottle that delivers a thin layer of liquid that dries into an oxygen-porous film in 2-4 seconds. The delivery system is a polymer film that is engineered to contain microscopic holes or pores. Development as a unique delivery system was funded by
3) **What is the function of the acetone?**

- In Skincerity, the acetone serves four purposes:
  - Prepare and clean the skin
  - Keeps the masque in liquid form so it can easily be rolled on
  - Keeps bacteria from growing in the bottle (the roller ball makes contact with both skin and bottle contents)
  - Is a catalyst that creates micro-porous holes which allow oxygen to reach the skin which is VITAL for healthy skin. The acetone evaporates so fast (it is on the skin for only 2-4 seconds) it creates tiny holes in the film. See magnified picture of the masque below;

4) **Is Acetone toxic and harmful?**

Acetone as a component of Skincerity is not harmful or toxic as proven in a FDA approved protocol clinical study funded by the National Institutes of Health - National Institute of Aging - SBIR No.2R44AG12881-0

5) **How is this acetone “safe”?**

The acetone and the Skincerity formula were proven safe in a United States FDA protocol study under research grants funded by the National Institutes of Health / National Institute of Arthritis and Musculoskeletal and Skin Diseases - SBIR No. 5R42AR44435
In another study, in conjunction with the University of Texas Health Science Center in San Antonio, Texas, results demonstrate that acetone alone or present in a mixture of acetone/polymer coating is non-toxic and nonirritating to skin. The study was funded by the National Institutes of Health - National Institute of Aging - SBIR No.2R44AG12881-0

6) For what period of time was this product researched and tested?

More than 10 years of National Institutes of Health funded research went into the product. Some of the research is available publicly through publications and abstracts that were presented at scientific meetings such as the American Academy of Dermatology Annual Meeting.

7) **Summary and Positioning**

Skincerity was born as a medical innovation. While there are medical research studies, Skincerity was commercialized as a cosmetic and it is marketed as a cosmetic, not a pharmaceutical. A clinical study on the cosmetic benefits of Skincerity was presented at the American Academy of Dermatology 63rd Annual Meeting. New Orleans, LA, USA. 2005 KO2011

The fact that it is an ingredient in a skin care product makes some folks think it is the same thing as common nail polish remover but that would not be at all correct.

- Acetone in Skincerity evaporates quickly and its vapors are at completely safe levels.
- Credible sources from scientific agencies and government agencies confirm the general
safety of acetone which has low toxicity and does not cause cancer
- Acetone is not absorbed into the blood stream because it cannot pass through the dermis or basal level of skin
- Acetone is considered the second safest solvent next to water

3. Wikipedia – Acetone, Ketone Bodies

Carolyn Pierini CLS (ASCP), CNC

Carolyn Pierini is a (California licensed) Clinical Laboratory Scientist and Medical Microbiologist with more than 20 years in the hospital laboratory departments of chemistry, hematology, immunology, R&D, and in particular, microbiology (St. Joseph and Children's Hospital-Orange, Ca.)

She became interested in human nutrigenomics—an area of functional medicine that identifies factors such as the effects of food, lifestyle, and environment as major determinants for the state of one’s health. As a nutritional consultant, Carolyn began educating others about the epigenetic science of achieving optimal health, incorporating innovative approaches and using routine blood and urine chemistry findings for identifying patterns related to nutritional needs.

She has authored numerous technical articles and professional materials for healthcare providers, has been a technical advisor to doctors, educational webinar host, TV and radio guest panelist and lecturer. Carolyn is a formulation consultant and a formulator of products used in medical professional supplement lines, where ingredient quality and safety follow strict standards.