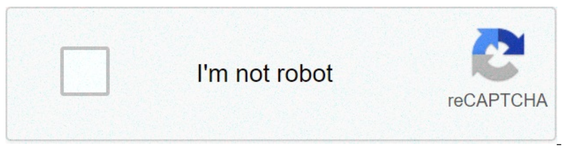

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Lactic acid and uric acid excretion

Uric acid is a compound found in the blood. It typically leaves the body through urine and feces. The uric acid that is not passed through your kidneys is dissolved in the blood. If you have high levels of uric acid, then it can lead to health issues with the most common being gout or kidney stones. Levels too low might also cause problems. Keep reading to learn more about how to test and treat uric acid. 1. What is Uric Acid? Uric acid is a waste product. It is a heterocyclic compound, which means it’s made up of at least two different elements including hydrogen, oxygen, nitrogen, and carbon. Uric acid is produced when purines from food are broke down metabolically. Uric acid is a normal element of urine. It is the outcome of your metabolisms final break down of purine. We purchased The Ordinary's Lactic Acid 10% + HA so our writer could put it to the test. Keep reading for our full product review. If you’re still turning to scrubs or Clarisonic-like brushes for a good exfoliation, it may be time to try something new—namely a chemical formula, like The Ordinary's Lactic Acid 10% + HA. Instead of physically removing dead skin cells, this one uses lactic acid, an alpha-hydroxy acid with a whole lot of benefits, to help you score glowing skin. Plus, it costs less than a drugstore mascara. When I opted to review this product, I was hesitant to think that something so affordable could really transform my skin, but after testing it out, I’m ready to share whether it deserves a spot on your vanity—or not. The Ordinary Lactic Acid 10% + HA Best for: All skin types Uses: Targets uneven skin tone, fine lines, dullness Active Ingredients: Lactic acid, Tasmanian pepperberry Clean?: No, contains triethanolamine Price: $6.80 About the Brand: Canadian brand The Ordinary is known for offering highly affordable skincare products that are backed by science. My skin is prone to acne, and while it’s mostly normal, it’s erring on the dry side now that cooler and drier winter air has moved in. But besides keeping my skin clear, my biggest skincare concern is discoloration leftover from breakouts—which is also where I saw the most potential for this product. While the instructions suggest working up to a once-a-day application, I like to give my skin a break from everyday exfoliation. So while testing this product, I not only stopped other acid products (like Biologique Recherche P50), but I also only applied this every other day. This product can be mixed with other products to dilute it, but because I have a lot of experience with chemical exfoliants, I applied it directly to my skin after cleansing at night. After application, I didn’t use any other products except for a heavy moisturizer. If you’re new to acid exfoliants, err on the side of caution and dilute it while you learn how your skin tolerates it. (Also, if you have any doubts, test it on a less-sensitive patch of skin somewhere else on your body.) Byrdie / Joline Buscemi Lactic acid, an alpha-hydroxy acid, is a unique chemical exfoliant. It has larger molecules than other AHAs, like glycolic acid, which means it doesn’t penetrate the skin as deeply. Instead, it works more superficially, giving skin a glow. It also means it can cause less irritation. But what does it actually do, besides making skin look great? It can be amazing for curbing acne, increasing cell turnover, and, at high enough concentrations, reducing the appearance of fine lines and wrinkles. The 10% formulation in this product is just shy of the 12% used in one study that showed it reached deeper skin layers to smooth wrinkles. The Ordinary Lactic Acid 10% + HA also contains hyaluronic acid, an ingredient lactic acid works especially well with, to moisturize the skin. This, along with Tasmanian pepper berry, helps reduce any inflammation and sensitivity that can sometimes occur with exfoliation. Byrdie / Joline Buscemi The Ordinary's Lactic Acid 10% + HA is a watery formulation with just a little bit of viscosity. I use about half a dropper, but sometimes more if I’m applying it down my neck. Because of how thin it is, it spreads easily and sinks in quickly. This product doesn’t sting my skin at all, but if you’re new to acids or if you have any breakouts or cuts, you may feel it. If you don’t though, don’t worry—it’s still working. Typically, I like to let this product sit on my skin for a few minutes before applying moisturizer. It’s best applied at nighttime, so there are no concerns about how it feels under makeup. However, if you do use it during the day, be aware that AHAs like lactic acid can make the skin more sensitive to the sun, so be sure to layer your SPF over it. I’m happy to share that The Ordinary Lactic Acid 10% + HA actually made a big difference in my skin. After only a few uses, I noticed a difference in my post-acne pigmentation. I had a small pimple that I’d picked at that was showing all the signs of sticking around for a while, but after using the acid, I could see that it was healing up quickly. I also had a few clogged pores, and while I noticed a small difference in them, they weren’t completely cleared out. Having said that, though, my skin stayed clear the whole time I was using the peel, and it didn’t cause any new breakouts or clogged pores. The day after using it, my skin always feels super smooth and soft. One word to the wise: This product can be drying, so make sure you pair it with a strong moisturizer. Overall, I didn’t notice any irritation or sensitivity, and because it’s a mild exfoliation, you shouldn’t experience any actual skin peeling. Byrdie / Joline Buscemi While I wouldn’t recommend using this product every day, I really like it as a way to give my skin a boost without having to worry about irritation. I’m keeping this one on-hand to use whenever I notice my skin getting a little dull, as well as to boost my other discoloration-reducing products. At less than $10, this product is priced very low compared to similar products, even though it's just as effective. So when it comes to this product, the price shouldn’t keep you from trying it out. A bottle of The Ordinary Lactic Acid 10% + HA is only $6.80, which feels like a steal when considering how well it works. Sunday Riley Good Genes All-In-One Lactic Acid Treatment: Good Genes is mentioned as a holy grail product time and time again, but at $85 (almost 12 times the cost of The Ordinary’s exfoliant), its price point is much less accessible. It has a creamier texture and more ingredients that target discoloration and skin tone, and while it only has a 5% concentration of lactic acid, its low pH still makes it powerful. Byrdie / Joline Buscemi REN Ready Steady Glow Daily AHA Toner: Lactic acid works well in conjunction with certain other acids. This toner, which contains salicylic and azelaic acid, is a great example of that. Together, the acids exfoliate, minimize the look of pores, and reduce discoloration. This toner is $38, but the 8.5-ounce bottle should last you a while. Final Verdict With a low price and serious results, I wholeheartedly recommend The Ordinary's Lactic Acid 10% + HA. The inexpensive bottle packs a punch and delivers smooth, clear skin without irritation. Pair it with a good moisturizer and you’ll wake up to renewed skin. Lactic acid, or lactate, is a chemical byproduct of anaerobic respiration — the process by which cells produce energy without oxygen around. Bacteria produce it in yogurt and our guts. Lactic acid is also in our blood, where it's deposited by muscle and red blood cells.It was long thought that lactic acid was the cause of muscle soreness during and after an intense period of exercise, but recent research suggests that's not true, said Michael Gleeson, an exercise biochemist at Loughborough University in the U.K., and author of "Eat, Move, Sleep, Repeat" (Meyer & Meyer Sport, 2020). "Lactate has always been thought of as the bad boy of exercise," Gleeson told Live Science. Contrary to that reputation, lactic acid is a constant, harmless presence in our bodies. While it does increase in concentration when we exercise hard, it returns to normal levels as soon as we're able to rest — and even gets recycled back into energy our body can use later on, Gleeson said. How muscles produce lactic acidThroughout most of the day, our body burns energy aerobically — that is, in the presence of oxygen. Part of that energy comes from sugar, which our muscle cells break down in a series of chemical reactions called glycolysis. (We also get energy from fat, but that involves a whole other chemical process). The end product of glycolysis is pyruvate, a chemical that the body uses to produce even more energy. But energy can be harvested from pyruvate only in the presence of oxygen. That changes during hard exercise.Related: Muscle spasms and cramps: Causes and treatmentsWhen you break into an all-out sprint your muscles start working overtime. The harder you work, the more energy your muscles need to sustain your pace. Luckily, our muscles have built-in turbo-boosters, called fast-twitch muscle. Unlike slow-twitch muscle, which we use for most of the day, fast-twitch muscle is super-effective at producing lots of energy quickly and does so anaerobically, Gleeson said. Fast-twitch muscle also uses glycolysis to produce energy, but it skips harvesting energy from pyruvate, a process that takes oxygen. Instead, pyruvate gets converted into a waste product, lactic acid, and released into the bloodstream.It's a common misconception that muscle cells produce lactic acid when they can't get enough oxygen, Gleeson said. "That's not the case. Your muscles are getting plenty of oxygen," he said. But in times of intense energy needs, muscles switch to anaerobic respiration simply because it's a much quicker way to produce energy.Muscle cells aren't the only sources of lactic acid. Red blood cells also produce lactic acid as they roam the body, according to the online text Anatomy and Physiology published by Oregon State University. Red blood cells don't have mitochondria — the part of the cell responsible for aerobic respiration — so they only respire anaerobically.Many species of bacteria also respire anaerobically and produce lactic acid as a waste product. In fact, these species make up between 0.01-1.8% of the human gut, according to a review published in the Journal of Applied Microbiology. The more sugar these little guys eat, the more lactic acid they produce. Slightly more insidious are the lactic acid bacteria that live in our mouths. Because of the acidifying effect they have on saliva, these bacteria are bad news for tooth enamel, according to a study published in Microbiology.Finally, lactic acid is commonly found in fermented dairy products, like buttermilk, yogurt and kefir. Bacteria in these foods use anaerobic respiration to break lactose — milk sugar — into lactic acid. That doesn't mean that lactic acid itself is a dairy product, however — it's 100% vegan. It happens to get its name from dairy simply because Carl Wilhelm, the first scientist to isolate lactic acid, did so from some spoiled milk, according to a study published in the American Journal of Physiology.Lactic acid is found in fermented dairy products, like yogurt, but lactic acid itself isn't dairy — it's 100% vegan. (Image credit: Shutterstock)Your body on lactic acidIt's common to feel a burning in your legs after you squat with heavy weights, or complete a hard workout. But contrary to popular belief, it's not lactic acid that causes the soreness, Gleeson said. Lactic acid is processed by the liver and the heart. The liver converts it back into sugar; the heart converts it into pyruvate. During exercise, concentrations of lactic acid in the body do spike because the heart and liver can't deal with the waste product as quickly as it's produced. But as soon as we're done exercising, lactic acid concentrations go back to normal, Gleeson said.Related: Feel the pain? Don't blame lactic acid. Muscle soreness after exercise most likely has more to do with tissue damage and inflammation, Gleeson said. Hard exercise physically breaks down your muscles, and it can take days for them to recover.Lactic acid can build up to life-threatening levels in the body, according to a review published in the Mayo Clinic Proceedings. But this condition, called acute lactic acidosis, happens because of acute illness or injury, not exercise. When tissues are deprived of blood due to a heart attack or sepsis, for example, they tend to go into anaerobic respiration, producing lactic acid."They get starved of oxygen," Gleeson said.But Gleeson said he's never heard of a case of life-threatening lactic acidosis because of exercise. "That would be most unusual." Additional resources: 1 What Is a Group of Ducks Called? 2 How Many Miles Wide Is the United States? 3 What Are the Dimensions of a DVD Case? 4 How to Get a Credit Card 5 What Is a Dangerous Blood Oxygen Level? 1 What Is a Group of Ducks Called? 2 How Many Miles Wide Is the United States? 3 What Are the Dimensions of a DVD Case? 4 How to Get a Credit Card 5 What Is a Dangerous Blood Oxygen Level? 1 How Countries Around the World Are Showing Solidarity With the Black Lives Matter Protests in Americ... 2 Armenian Genocide Remembrance Day: What Was the Armenian Genocide? 3 What Is the Definition of an Epic Hero? 4 What Is the Difference Between a Payor and a Payer? 5 What Was the 1950s Era Called? Skip navigation! Uric acid is a byproduct created when the body digests foods containing purines. Purine is a non-essential compound—meaning it can be produced by the body and it can also be consumed in foods. Managing uric acid levels is an important topic for individuals who have risk factors for gout because high uric acid levels increase the likelihood of developing gout. Here, we look at the relationship between the purines in your diet, uric acid, and gout. Gout is a common chronic condition affecting the joints. It is caused by a build-up of uric acid in the bloodstream that forms urate crystals that are deposited into the joints, which causes inflammation, swelling, and severe pain. The body filters out uric acid through the kidneys and it is excreted through urine. The amount of uric acid in your body can become too high if you eat a diet high in purines, the body produces too much, or if your body isn’t able to excrete it quick enough. Diet: Your diet can raise the levels of uric acid in your blood and increase your risk for developing gout, so a diet high in purines, fructose, and alcohol increase your risk of gout. Fructose is the sugar found in fruit and studies have found that products sweetened with fructose increase the risk for gout. Obesity: Research has found an increased prevalence of gout among people who are obese and overweight than individuals who fell within a normal body weight, independent of sex or race. Gender: Gout is more likely to affect men because women tend to have lower levels of uric acid. After menopause, the uric acid levels rise for women to be more similar to men, and their risk for gout increases. Medical conditions: Some health conditions are associated with an increased risk for gout, such as kidney disease, diabetes, metabolic syndrome, and high blood pressure. Family history: There is a hereditary trend with gout, meaning you are more likely to develop gout if other members of your family have been diagnosed with it. Age: Men usually develop gout between the ages of 30 to 50 and women have a higher risk for gout after menopause. The most common cause for gout is when the body’s ability to excrete uric acid is impaired leading to the build of uric acid. Removal of uric acid can be slowed by hereditary factors, metabolic disease, kidney disease, and other conditions affecting the health of the kidneys. Research studies have looked at the relationship between diet and uric acid secretion. One study found that the pH of urine could be lowered by a diet rich in plant foods, which lead to increased secretion of uric acid in urine when compared to the group consuming more of an acidic diet with increased protein foods and less plant-based foods. They concluded that diet can be used to increase uric acid removal from the body, in addition to using the diet to limit intake purines that increase uric acid levels. Studies have also found a relationship between vitamin C and gout. Foods rich in vitamin C—citrus fruit, peppers, strawberries, and broccoli—or taking a vitamin C supplement helps to increase the amount of uric acid excreted by the kidneys. Limiting intake of purine-rich foods can help to reduce gout flares because when there is less purine in your diet, uric acid levels typically decrease as well. However, diet alone usually can’t prevent gout flares because there are multiple factors affecting gout, including: Purine production Diuretics Under excretion of uric acid Alcohol Reabsorption of uric acid The type of food also makes a difference in whether it increases the risk of gout flares. Processed foods, animal products, and seafood high in purines have been associated with increased uric acid levels and more frequent gout flares. Plant-based foods that are high-moderate in purines are less likely to cause high levels of uric acid and are more recommended for individuals with gout. For some, making diet changes can help to reduce the risk of developing gout and the occurrence of gout flares. Pay attention to how these different foods affect you because everyone has different limits and different foods that trigger flares. Foods that are high in purines should be avoided or ate sparingly with gout. Alcohol: All types Red meat: Beef, pork, and lamb Seafood and shellfish: Shrimp, mussels, anchovies, sardines, and lobster Organ meats: Liver, kidney, heart, etc Venison and meat gravies should also be avoided. These foods should be limited but can be consumed in moderation with gout. Oatmeal Wheat bran Mushrooms Green peas Spinach Asparagus Cauliflower Kidney beans Dried peas Beans Lentils Foods low in purine are safe for a gout diet and can be consumed more liberally than the high-moderate purine foods. Rice Barley Pasta Vegetables (besides mushrooms, green peas, spinach, asparagus, and cauliflower) All fruits Avocado Low fat dairy Eggs Tofu Because many factors contribute to the amount of uric acid in the blood, diet alone may not be enough to prevent gout or decrease the number of gout flares. Your diet shouldn’t be discounted though because it can help with managing more than just the number of purines in your diet. It can help with controlling conditions that affect the overall health of your kidneys, such as your blood pressure, diabetes, and weight. Thanks for your feedback! What are your concerns? Verywell Health uses only high-quality sources, including peer-reviewed studies, to support the facts within our articles. Read our editorial process to learn more about how we fact-check and keep our content accurate, reliable, and trustworthy. Ragab G, Elshahaly M, Bardin T. Gout: An old disease in new perspective – A review. 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