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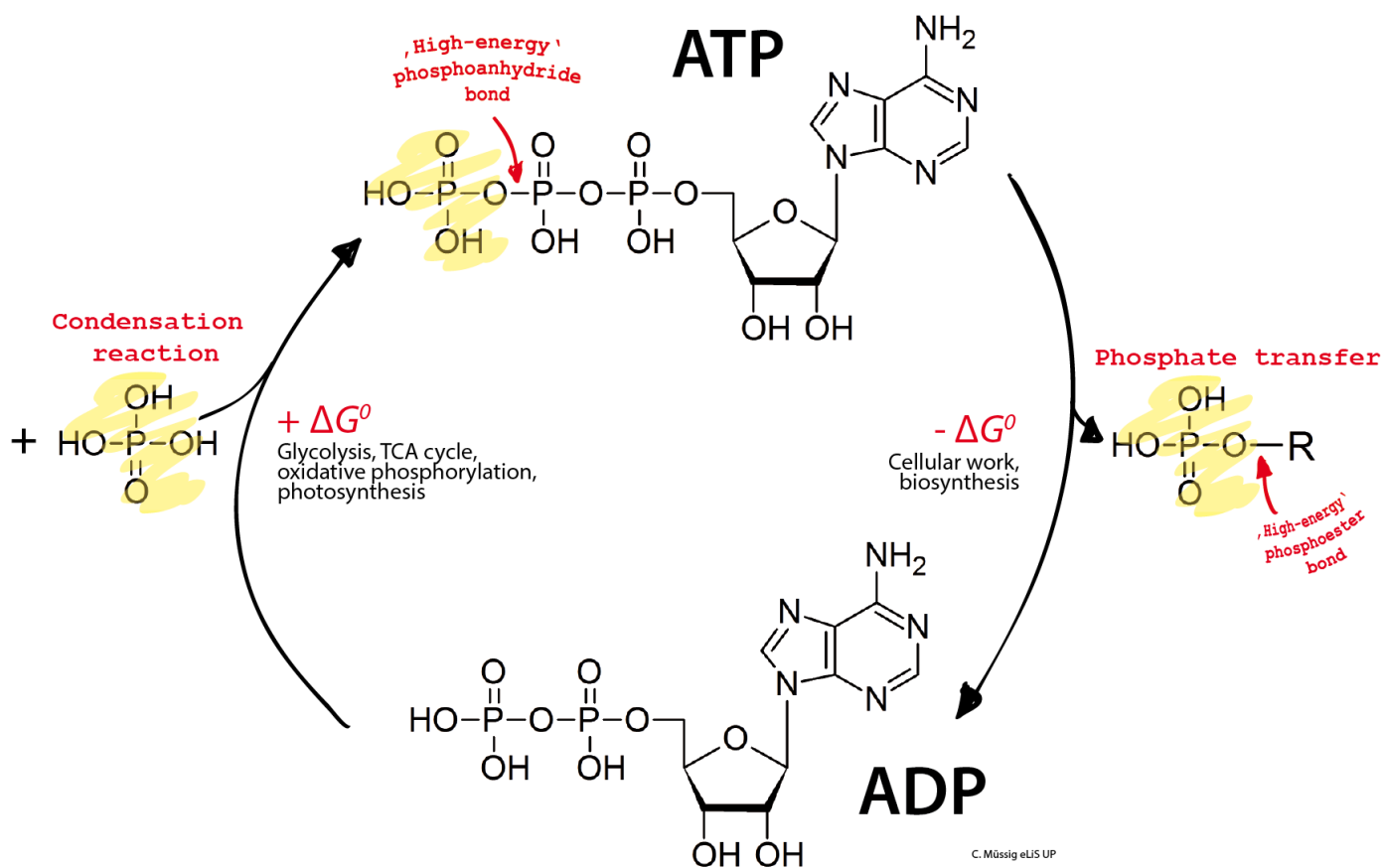
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ATP: The Fuel that Powers Our Cells

By Zach Nasr In Articles, Food And Supplements For Optimal Brain Function 6 Comments

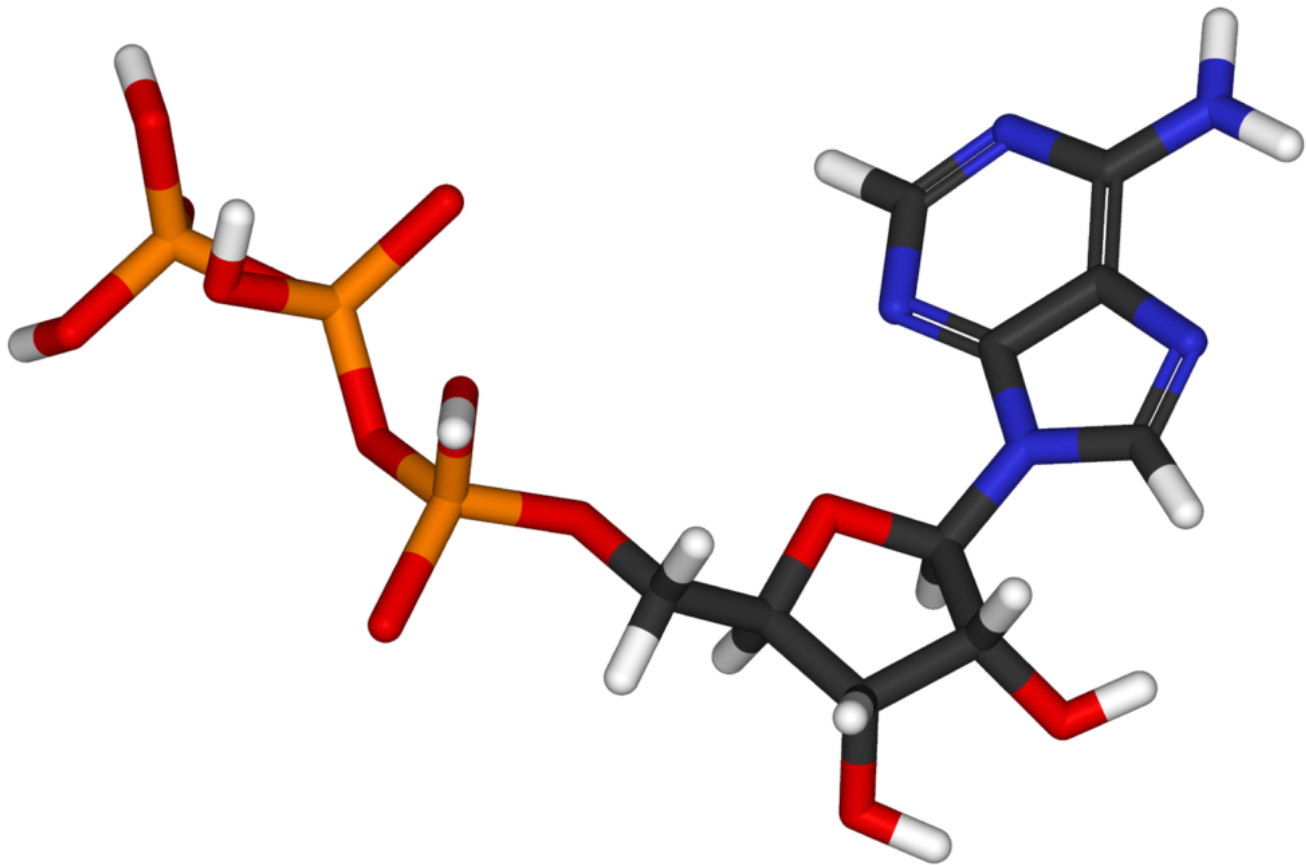




reactions. Many call it the energy currency of our cells, and the transactions are metabolic reactions.

When our body turns calories into energy for our cells, enzymes convert carbohydrates into glucose, and our liver converts fatty acids into ketones. These are two of the substrates that our mitochondria turn into ATP. Many people say that the mitochondria are like little power plants in our cells.

I liken mitochondria to little battery factories because ATP is a way that our body can store energy, transport it to another area in the cell, and then use that energy there to power a chemical reaction. For this reason, ATP is often known as a co-enzyme because it works with other compounds.



3D Model of ATP Molecule



Most people hear free radicals, and think of them as the “bad” compounds that cause cancer, but this is only part of the truth. Free radicals and reactive oxygen species (ROS) are produced by chemical reactions in our mitochondria, and are even produced by our own immune system.

These molecules can cause damage called oxidative stress, but these molecules are not universally bad. They exist as feedback loops or signaling molecules so our body knows what is going on.

What Happens if There is Too Much Oxidative Stress?

If there is too much oxidative stress in an area, then our cells and organelles (organelles are basically the organs of our cells) know there is something wrong, and they will often self destruct.

This can be a crucial healing process as long as it happens in limited amounts. For example, the death of unhealthy cells like cancer can be a good thing because our body can recycle and repurpose the nutrients that the cell is made of.

However, if we constrict blood flow, nutrients, or oxygen to a certain area of the body for an extended period of time, then the damage can be too great to repair. If unchecked, then this can cause oxidative damage to run rampant, and can even cause cell death which is called necrosis. *Read our [Full Article on Reactive Oxygen Species \(ROS\)](#) here.*

It's All About Balance





A little bit of oxidative stress can create a little inflammation which tells our body where to send resources so our body can heal a damaged area. Like I said before though, unchecked oxidative stress can cause cell damage and even cell destruction. ATP is one of the primary resources needed to rebuild an area in our body if there is damage so as a general rule of thumb, we want to lower our oxidative stress, and raise our levels of ATP.

Tons of Antioxidants is Not The Answer

Studies show that if we just flood our bodies with mega-doses of antioxidants all the time, then it can actually impair our body's ability to heal because it confuses our body's signaling mechanisms that tell it where and how to heal.

A little stress, oxidative or otherwise, is a good thing! It is unchecked, chronic stress that causes problems especially if our body never gets a break. There are a lot of supplements that we can use to lower oxidative stress and raise ATP all at the same time.

How Do I Raise ATP for Healing and Energy?

There are a few ways that ATP can be produced. The most common way is the Krebs's Cycle (aka The Citric Acid Cycle). There are other ways like beta oxidation and oxidative phosphorylation, but for the sake of this article, we are going to keep it simple so you dodged that bullet.

There are certain molecules called redox signaling molecules. Redox simply means "reduction and oxidation". These molecules can donate an electron or take an electron away from another molecule to facilitate a chemical reaction.



has numerous benefits for our brain, and heart.

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Many of these compounds like CoQ10 are produced naturally by our own bodies, but as we get older and incur stress or damage to our bodies, we are less able to produce these compounds.

Alpha-lipoic acid (ALA; not to be confused with the omega-3) is another antioxidant produced by our body that facilitates ATP production and reduces oxidative stress.

However, ALA has some additional benefits like removing heavy metals.

ALA also activates a compound called PGC-1a that not only protects our DNA from the effects of aging (by protecting our telomeres), but it also stimulates mitochondrial biogenesis.

This means that it signals our cells to make more mitochondria! This in combination with CoQ10 can be a powerful one-two punch to boost your energy at a cellular. Creatine is another very common and safe supplement used by



Besides simply eating calories, there are certain micronutrients that can increase you ATP levels by optimizing our bodies enzymatic processes and nutrient transport. Most of the B vitamins help facilitate the Krebs Cycle in our mitochondria especially vitamin B1, B2, and B3 (also known as thiamine, riboflavin, and niacin respectively). Many common meats, algae, and sea veggies contain these crucial B vitamins.

The Magnesium Factor

Optimal magnesium levels are associated with our mitochondria working well, and this mineral aids in nutrient transport that also helps our body produce ATP. Many nuts and seeds like pumpkin seeds and almonds contain magnesium as well as leafy greens like spinach and chard are great sources of magnesium.

Glutathione: “The Master Antioxidant”



These nutrients and more can be found in all crucifers like broccoli, kale, cauliflower, brussel sprouts, radishes, turnips, arugula, bok choy, and more. Our body also gets sulfur for glutathione from alliums like garlic, onion, green onion, and shallots.



What Supplements Are Best?

There are many more things that raise ATP like NADH, Cordyceps, fermented ginseng, and more. Below, you will find our favorite combinations of the most well-researched supplements for raising ATP safely and effectively. I also love CoQ10 because there is so much data behind it.

Creatine and exogenous ketones are also a great way to create more ATP without burdening your body with more sugars. These are both alternative energy substrates for ATP especially in the muscles in the case of creatine, and especially in the brain and nervous system for ketones.

Products that reduce oxidative stress can also help optimize our body's ATP production.

Read our [Full Article on Reactive Oxygen Species \(ROS\)](#) to learn more about



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healing protocols. He has since been sharing his knowledge of nutrition and functional medicine for the last 12 years as a health coach and health educator.

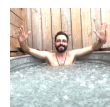
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March 14, 2023 / by Admin / in Articles

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February 9, 2022



COMMENTS



Amy

December 1, 2018

FANTASTIC LIST!! I think that D-Ribose should also be on that list too though. Thanks for the informative article!

[REPLY](#)



Cavin Balaster

March 21, 2019

Great call, Amy! What's your experience with D-Ribose? I have never used it. 😊

[REPLY](#)



What about frequency collision in human brain, changing our natural brain process throughout our entire day?. Strong phone reception, does effect the way I feel. I have my own theories about this. Any comments?

[REPLY](#)



Cavin Balaster

March 21, 2019

EMFs have been shown to disrupt ATP production. I would love to hear your theories about this? 😊

[REPLY](#)



Cavin Balaster

April 1, 2019

Absolutely. There is a lot of research around EMFs as well. Especially for sensitive brains.

[REPLY](#)

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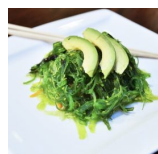


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- Vekit

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