Does Pyruvate Help In Weight Loss?

There is currently a debate as to whether or not pyruvate can help in weight loss. There are two distinct camps, although the body of evidence favors those that believe that they can lose weight by taking a pyruvate supplement. However, pyruvate is not an essential substance, which means that it is produced in the body from other substances. It is, in fact, the product of glycolysis, in which glucose is metabolized in the presence of oxygen to adenosine triphosphate (ATP), the molecule of energy, and two molecules of pyruvate. The two pyruvate molecules then generate further energy by one of two pathways. In the first, the pyruvate forms acetyl-coenzyme A which is the first part of the Krebs Cycle, also known as the Citric Acid Cycle, which is responsible for energy production in the mitochondria. In the second, the pyruvate forms oxaloacetate, which is either used to form intermediates used in the Krebs Cycle or to generate more glucose through the process of gluconeogenesis. The ATP formed in the mitochondria is a form of stored energy, just like a battery. When energy is released it is converted to adenosine diphosphate and the battery is discharged. The Krebs Cycle then adds another phosphate group to convert it to the triphosphate again, and so on. The energy is not carried round the body, but used in the cells in which it is generated. Every cell in the body contains a mitochondrion, and generates its own energy. Pyruvate is needed in every one of them. The upshot of all this is that pyruvate is created naturally by the body, and therefore needs no supplementation. However, if there is a need to stimulate or increase the breakdown rate of blood sugars to prevent their later metabolism to fat, and hence help to prevent weight increase, then supplementation could be effective. In fact, it can be argued that the more pyruvate available then the more is the potential for energy to be generated, although it is glucose that is the main player in that scene. In the absence of supplementation, of course, pyruvate is available naturally in cheese, red wine, dark beer and apples, and is also produced from pyruvic acid. The acid itself can cause some gastrointestinal problems, but when it sees a calcium or sodium salt, such as common salt, it forms the stable pyruvate. But the real question is, if pyruvate can be used to reduce weight, then by what mechanism? Without a projected mechanism then the practical results cannot be explained, which renders pyruvate just a player but not necessarily the major player. The answer to this question is slightly open in that while many believe that pyruvate can be used to reduce weight and body fat, just as many do not, believing that there is insufficient evidence to reach that conclusion. However, if we examine the potential mechanism and determine the probability of that occurring, then we should be able to answer that question. Athletes claim that pyruvate supplements help them to perform better through its effect on the Krebs Cycle that is responsible for the generation of energy in the body. It speeds up the transport of proteins and glucose into the mitochondria of the muscles, and so enables energy to be generated rapidly within the muscle cells when required. This is a reasonable hypothesis, and one that is perfectly feasible given our knowledge of how the Krebs Cycle works. Pyruvate is an essential component of the Cycle, and in the presence of an excess of the other components, then additional pyruvate might well speed it up, and so generate energy faster and perhaps even increase the rate of thermogenesis and the burning of fat in the body. However, there is another possible reason for pyruvate helping to give the appearance of an increase in energy levels, and one that is just as feasible. During exercise, whether in a gym or in actual competition, the body first uses the energy generated in the mitochondria through the natural operation of the Krebs Cycle. Once the blood glucose is used up, the glycogen stores in the muscles and liver are used. Glycogen is the body's reserve store of energy, and is used when blood glucose has been depleted. Since pyruvate generates an increasing reliance on blood glucose for energy, the store of glycogen remains unused until it has to be, and hence the body appears to gain in energy. However, although this can explain at least partially the increased energy athletes experience when taking pyruvate supplements, it does not explain the loss in fact, that generally occurs after the glycogen reserves have been used up. A six week double blind study carried out in Connecticut in 1999 on 26 people given 6 grams of pyruvate a day for 6 weeks resulted in a significant decrease, not only in body weight, but also in the mass of body fat, in the group given the pyruvate, but no effect in the control group. A study in Pittsburg again showed pyruvate to result in loss of fat, with a group of overweight women losing three pounds more fat than a control that were given a placebo. However, the results here were questionable since the difference in weight loss was small in comparison to the original weight of the subject. The same is true of a follow-up study in which the control group lost only two pounds less than the pyruvate group. A third study in the same group should only a 1.5 pound difference. These results are no conclusive, although the weight of evidence is in favor of pyruvate being effective in helping you to lose weight. However, it has not yet been universally accepted. Is there a downside to using pyruvate that could argue against its use unless its effects have been conclusively proved? Probably the only one is that pyruvate can cause gastrointestinal problems if taken in large doses, but these would have to be in the region of around 30 - 50 grams daily, which is above those normally recommended not to mention very expensive. Although the jury is still out on pyruvate, it seems that it does help to reduce weight, and that apart from the gastric discomfort when excessive amounts are used, it has no side effects. It is also of use in enhancing energy levels, and in demand by athletes and body builders, and its effects are supported by theory and the way it works in the mitochondria to generate energy.

About the Author

More information on pyruvate for weight loss is available at VitaNet ®, LLC Health Food Store. http://vitanetonline.com/

Source: http://www.freearticlespot.com