ASEA Metabolite Findings FAQ

Q. Who conducted this research?

A. This research took place at the North Carolina Research Institute, a collaborative entity involving seven universities (Duke, UNC Chapel Hill, NC State, UNC Charlotte, NC Central, NC A&T State, UNC Greensboro, Appalachian State). The research was led by the Appalachian State University's Human Performance Laboratory under the direction of Dr. David Nieman. Dr. Nieman and his team of Ph.Ds. are renowned for their rigorous research into the effects of supplementation on exercise and exertion.

Q. How was the research conducted?

A. The research team selected 20 highly fit cyclists, then randomized them into two groups of 10. Using double-blinded techniques in which neither the athletes nor the researchers knew which group received ASEA and which received a placebo, one group drank four ounces of ASEA each day for seven days, while the other drank equal amounts of placebo. At the end of seven days, both groups undertook a 75-km cycling trial. Blood was drawn immediately before the trial, immediately after, and one hour after.

After a washout period in which the athletes drank neither ASEA nor placebo, the crossover portion of the research took place. Again double-blinded, the original ASEA group now drank the placebo for seven days, and the original placebo group drank ASEA. At the end of the seven days, both groups did the same 75-km cycling trial, and blood was drawn just as before.

Q. What was used as a placebo?

A. The answer to this question is extremely enlightening, especially if you've ever heard someone say that ASEA is just salt water. In the research that was conducted by the Human Performance Laboratory, the placebo *was* salt water! In other words, the research compared ASEA to salt water and found significant and substantial differences, so there is no way anyone can ever say that ASEA is simply salt water.

Q. What were the results of the research?

A. The researchers expected to see some difference in metabolite shift between ASEA and the placebo. However, they expected to see those shifts AFTER exercise, since most researched supplements express metabolite shifts due to the combination of supplement and exercise.

To their surprise, they found that athletes who drank ASEA experienced a significant shift in metabolites PRIOR to exercise. In total, researchers found a shift in 43 metabolites simply from drinking ASEA, even before they began to cycle. The results were so extraordinary that Dr. Neiman said, "When I saw it, I couldn't believe it."

Q. What are metabolites?

A. Metabolism is the name we give to the chemical reactions that take place inside our cells in order to sustain life. Metabolites are the molecules that participate in our metabolism cycles. They are very small molecules in the blood that shift in response to supplementation and/or exercise. Metabolomics, the study of these metabolite shifts, is the very latest tool used by researchers to understand what effects supplementation has in the human body.

Q. Why was this shift in metabolites so surprising to the researchers?

A. In this research, 108 metabolites were mapped, and so the first thing that caught the scientists off guard was that a shift in 43 metabolites represented about 40% of the total. When you consider that most supplements may shift 10-20 metabolites, the sheer number of shifts was enough to get the researchers' attention.

But even more surprising, these shifts occurred PRIOR to exercise. Most supplements tested by the Human Performance Lab express metabolite shifts AFTER exercise. In other words, most supplements cause metabolite shifts *when combined* with exercise. ASEA, on the other hand, caused a major shift in metabolites even before the athletes began cycling. Simply drinking ASEA caused these shifts.

ASEA Metabolite Findings FAQ (continued)

Q. What do these metabolite shifts mean?

A. The specific metabolite shifts in the athletes who drank ASEA pointed mostly to a vast mobilization of free fatty acids. Fatty acids are the main source of fuel for the body, and they mostly come from fat stores in the body known as adipose tissue.

Q. Free fatty acids? Why is that significant?

A. When anyone, athlete or not, begins to exercise, the muscles need fuel. Initially, the fuel source for this physical effort is blood glucose and muscle glycogen. When muscle glycogen is depleted, the body shifts to another source of fuel: fatty acids from adipose tissue. The body converts triglycerides in adipose tissue into free fatty acids, which "mobilizes" those fatty acids – puts them in the blood stream for the muscles to use as fuel.

What makes the research results so surprising is that even *before* exercise – before using muscle glycogen to the point of depletion – fatty acids are mobilized and ready to use as fuel for the muscles. The body is being "primed for exercise," as one Ph.D. on the research team put it.

Q. What effect does this have on muscle glycogen?

A. The implication is that muscle glycogen is likely being spared by drinking ASEA. While further research is being done to confirm this, the ramifications are huge. Athletes take months to train their bodies to spare glycogen and use fatty acids as fuel. And here it appears to be happening simply from drinking ASEA.

Q. What if I'm not an athlete? Does this research mean anything for me?

A. The mobilization of free fatty acids is incredible news for athletes, but it also has meaning for the rest of us, as well. Once these fatty acids are mobilized, they *will* be used by the body as fuel. They are the primary fuel source for a body at rest. The body needs fuel simply to stay alive, so the freed-up fatty acids will be burned no matter what.

Q. Does this make ASEA a weight-loss product?

A. It is wrong to think of ASEA as a weight-loss product. *Exercise* is a weight-loss product. *Proper nutrition* is a weight-loss product. But that said, one very clear conclusion coming from the research is this: If you want to burn more fat during exercise, drink ASEA.

Q. I understand that the research also indicated an increase in ascorbic acid. What does that mean?

A. The research did show a spike in the body's production of ascorbic acid post-exercise, but it's simply too early to draw any conclusions about what this means. Further research will be done to learn more.

Q. How does Redox Signaling tie into this research?

A. Redox Signaling works on a cellular level, and its primary functions ensure the ongoing vitality of our cells, including proper cell metabolism. Metabolites are the "fingerprints" left behind during cell metabolism, an indication of the chemical reactions that take place inside the cell. This research helps reveal some of the effects of the world's first and only Redox Signaling supplement on cell metabolism.