

Possibly the Best Thing to Consume First Thing in the Morning!

The Science Behind Shake One™

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Morning nutrition is typically atrocious. For those who even eat breakfast, a bagel and a coffee, or worse, a morning pastry is what they can get their hands on fast. Most others simply skip breakfast because they have no time, or they believe it's a great way to lose weight. Some others can't start the day without a bowl of cereal. The common denominator to all of these options is that one of them are particularly healthy. The lack of adequate morning nutrition for many leaves the morning, the window for the greatest opportunity for improvement. Shake One™ is an all in one, one-stop solution to get everything you need in the morning to build muscle, jumpstart your fat metabolism, and get you going with the energy you need to start the day on your right foot. Shake One™ is your first meal of the day. It replaces your breakfast. It replaces your morning coffee. It even replaces your escalating concern about burning fat. No need to worry if you're eating too many calories and diminishing your fat loss progress, or skipping breakfast altogether, slowing your metabolism and still diminishing your fat loss progress. Shake One™ is a low-calorie, high protein, high fiber, fat burning, muscle building, energy stimulating, great-tasting, super formula that you simply shouldn't start any morning without.

Shake One™ is formulated with four critical components to your morning routine that you should never start any morning without!

ALL-NATURAL MORNING STIMULANT BLEND

You know you want coffee anyway to start your day, and there is nothing wrong with that. The caffeine that exists in your morning coffee has a plethora of cognitive, physical and fat-burning benefits. The only downsides are that it can be time-consuming to prepare or expensive to purchase daily. It will stain your teeth if consumed black, or will contain extra unhealthy fats and sugars otherwise. Shake One™ is the perfect solution for your caffeine fix as it contains 4 sources of highly purified, naturally-occurring caffeine and other stimulants. The fat burning side of it is just a bonus feature for Shake One™. Caffeine is probably the most well-known stimulant of the central nervous system as it has acetylcholinesterase properties that helps improve neurotransmission and thereby assisting with physical coordination. It also is a mild cognitive enhancer, improving concentration and mood through enhanced dopamine signaling, but it's most notable property, once in the brain, is to antagonize adenosine receptors, which prevents the onset of drowsiness and promotes alertness. While in the

body it produces increased wakefulness, improved thought-processing, increased focus and better general body coordination. Caffeine has additional roles on the autonomic nervous system as ingestion increases epinephrine and norepinephrine levels. This provides a thermogenic effect of its own. It is effective at enhancing fat burning by increasing fat metabolism.

There are four distinct ingredients to the “All Natural Morning Stimulant Blend”

1. *Coffea robusta* bean Extract

Also known as robusta coffee, this coffee bean has its origins in central and western Africa. It has double the amount of caffeine and more antioxidants than the typical arabica coffee. This particular bean extract has been purified to the point where it yields 97% of pure caffeine.

2. PUR CAF®

Another highly potent source of caffeine, this time from an organic green coffee bean (*Coffea canephora*), PUR CAF® is a patented coffee ingredient that naturally yields a 95% purity of caffeine.

3. Guarana Seed Extract

Guarana is another all-natural highly potent source of caffeine coming from the species *Paullinia cupana*. More than just caffeine however, guarana contains catechins, tannins, and procyanidins, each with their own distinct cognitive and health benefits.

4. *Theobroma cacao*

The fourth and final ingredient in the stimulant blend is a seed extract from cocoa beans. This extract is 20% theobromine, a compound very similar to caffeine but without some of caffeine’s side effects. Additionally, *Theobroma cacao* contains other constituents including, flavanols and nootropics. The flavanols in cocoa beans are linked to better blood flow and increased oxygenation in the brain. This effect is thought to have a protective role during aging. *Theobroma cacao* is also known to contain the nootropic phenylethylamine, which functions as a neuromodulator in the central nervous system. With its effects on dopamine and acetylcholine release, it also

has a euphoriant property that assists with improving the motivation to get things done.

Collectively, these four naturally sourced stimulating ingredients provides an extra boost of energy to start the day, along with mental, cognitive and physical enhancements. However, that is just the first phase of Shake One™. Nobody should have to make the choice between a morning shot of caffeine or a morning protein shake. Shake One™ makes sure you can do them both at the same time.

MUSCLE GROWTH SHOULD START FIRST THING IN THE MORNING

The morning is notoriously the time where most people fail to consume protein. The science is very clear that muscle grows in small intervals after each meal. Therefore, when you're not eating, muscle is not growing. Most people consume a very hearty protein heavy dinner, a moderate dose over lunch, and pitiful amounts during breakfast (figure 1). Since muscle does not grow when you're fasting, skipping protein for breakfast is simply extending already the longest period of time when your muscles are not growing.

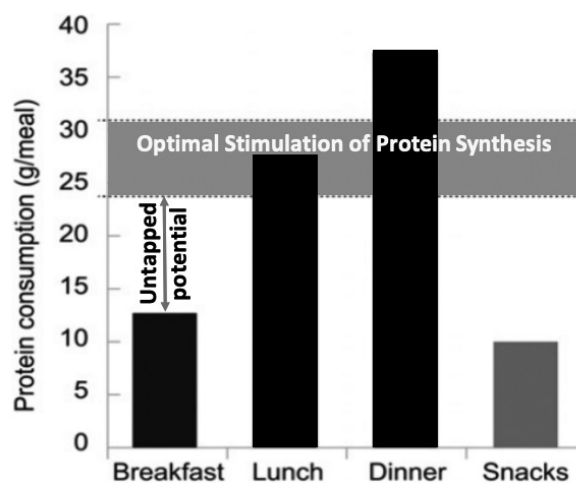


Figure 1. Optimal protein consumption to maximally stimulate protein synthesis on average is between 25-30 grams per meal. Breakfast typically falls far below this level and thus is the best opportunity maximize the muscle growth potential.

Skipping protein for breakfast is a double-edged sword. Not only are you missing an opportunity to grow muscle, if you do not break your fast with a dose of protein to jumpstart your muscle protein synthesis, then you are just losing muscle until you do. Not everybody has the time to whip up 5 eggs each morning to maximally

stimulate muscle growth, but that's what it would take. 30 grams of protein is all you need at any given time to maximally stimulate protein synthesis. Taking 30 grams in the morning when you first wake up is the best time to maximize a full day of muscle growth. Thus, if you are not getting 30 grams of protein in the morning already, then this will be the greatest improvement you can make to your overall progress. If you train hard, and eat protein-rich meals at various other times during the day, then most additional interventions will only add modest improvements to your goals. Eating protein in the morning, adds a completely new dimension to muscle growth that your body may not have seen yet.

Whey Protein Isolate (30g)

Shake One™ spares no expense. Only the highestgrade and type of protein made its way into this formula. Being very low in milk fat or sugars, this extremely highly pure protein also has the highest anabolic potential. This level of high-quality protein ensures the fastest digestion, absorption and delivery into the muscle to achieve a rapid and robust increase in muscle protein synthesis to kick-off the muscle building for the rest of the day.

With this perfect dose of protein serves two purposes: provides the optimal stimulus for muscle growth while also not providing any extra unnecessary calories. The next phase of Shake One™ is focused on providing the best nutrition for fat loss.

SOLVING THE CONUNDRUM OF FAT LOSS

There are unlimited types of fat loss strategies, many of which can be quite successful. Breakfast time is a highly debated concept on how to best lose weight. However, what is not commonly understood is that nearly all fat-loss strategies do so at the expense of muscle mass. It is very uncommon for any fat loss diet to focus on preserving muscle mass. For many overweight individuals, this is not of grave concern, but if you are somebody who has worked hard for the muscle you have and don't want to sacrifice it in order to achieve some fat loss, then most of those diets are not for you. The ketogenic diet can be very effective at weight loss, but the low protein aspect of that diet, will sacrifice your hard-earned muscle. Various types of fasting can be another great strategy to restrict calories, but also not an optimal method to preserve muscle. The simple solution is to reduce overall calories but keep protein levels high.

Protein synthesis is an energy demanding process and so metabolic rates can be kept higher. However, this can be challenging on its own because it can be quite appetite stimulating. Therefore, in keeping with the interest of reducing fats and carbohydrates at a minimum, there are still some added benefits with the type of fats and carbohydrates consumed. Both of which were formulated into Shake One™ to specifically to aid with fat loss.

MCT Powder

Medium chain triglycerides are a particular type of fat source that releases medium chain fatty acids instead of long chain fatty acids. The length of the fatty acid chain actually determines a lot about how it gets handled in the body. While long chain fatty acids are predominantly stored as bodyfat, short chain fatty acids are typically used for energy much quicker. Long chain fatty acids are heavily processed by the body. They are digested by pancreatic lipase and emulsified by bile. They are then absorbed into the intestinal cells, packaged into chylomicrons and excreted into the lymphatic system. In contrast medium chain fatty acids do not require enzymatic breakdown or emulsification because it passively diffuses through the intestinal cells and into the portal circulation directly. Consequently, medium chain fatty acids are absorbed much faster and act quite distinctly from long chain fatty. Once in the body, they are typically burned as energy or converted to ketones with very little actually being synthesized into body fat.

Activating fat metabolism pathways in the morning is believed to facilitate fat metabolism for the remainder of the day. Any left-over medium chain fatty acids that were not burned right away, are converted to ketones which will be used for energy later that day keeping your fat metabolism revved up. Moreover, the consumption of MCT in humans has been shown to enhance the oxidation of long-chain fatty acids in addition to medium chain fatty acids. Simply put, not only does your body tend to burn the MCTs that you consumed, but you will also tend to burn more preexisting body fat in the process. MCTs do more than just assist with fat metabolism. Several acute feeding studies in healthy men and woman have reported that consuming MCTS alongside a standardized test meal significantly reduced energy intake at following meals. Thus MCTs can be used to jump start your fat oxidation pathways while at the same time manage your appetite for the remainder of the day.

Fiber

Unless you are exercising that morning, there is not a high demand for simple carbohydrates to start the day. For this reason, most of the carbohydrates found in Shake One™ comes from fiber as both oat bran and inulin. Fiber is a type of carbohydrate that can assist with caloric restriction and fat loss as it can be deducted from your total calorie count. More than just simply reducing net calories, fiber can be used for reducing cholesterol and triglycerides and assisting with fat loss. Inulin is a specific type of fiber that is not digested or absorbed in the stomach. Inulin goes to the bowels where a special type of bacteria, that are associated with improving bowel function and general health, are able to use it to grow. Inulin has been shown to decrease the body's ability to make certain kinds of fats. Research shows that taking inulin seems to lower TG on average by 7.5% and decreases body weight in those who are overweight. Inulin has been noted to increase mineral absorption in the colon due to increasing pH in the colon. Other benefits include normalizing plasma glucose, and improving insulin sensitivity. Nearly everybody can benefit from added fiber in the diet, and the morning is a great place to start.

With boosting energy, growing muscle and burning fat are already accounted for, the formulation of Shake One™ does not stop there. Shake One™ is finished off with one more ingredient to cap-off your overall general health.

TAKING CONTROL OF CIRCADIAN RHYTHMS

First thing in the morning our ancestors would always get a healthy dose of vitamin D from the sunrise. Humans today spend more time indoors than at any point in history. Consequently, over 1 billion people are vitamin D deficient globally. Many of those who are not deficient, still do not have an optimal level of vitamin D either. Due to the many health benefits of vitamin D, supplementation can have a great impact on a variety of health systems. Supplemental vitamin D is associated with a wide range of benefits including increase cognition, immune health, bone health and well-being.

With vitamin D inversely related to melatonin, it has a significant effect on your circadian rhythms. Something the majority of people could improve in their lives. Because of this inverse relationship with melatonin, vitamin D should not be taken at night. The best time to burst of vitamin D is first thing in the morning like our ancestors did. Supplementing with vitamin D in the morning will help regulate your circadian

rhythms and in fact help with your sleep quality at night. It may be hard to believe that a morning supplement may be the key to better sleep quality, but several studies have shown a correlation between vitamin D morning supplementation and increased REM sleep, deep sleep and total hours of sleep at night. With the plethora of health benefits of a good night's sleep, vitamin D is imperative for morning nutrition.

More than just regulating your sleep, vitamin D is correlated with cognition and inversely with depression. From a muscle standpoint, evidence suggests that vitamin D may improve muscle recovery after a workout as suboptimal levels are associated with decreased power output and impaired recovery. Suboptimal levels of vitamin D is very common. One study found that up to 64% of elite NFL players are vitamin D deficient. That same study found a correlation between NFL players getting injured and them having low vitamin D levels. This may also be related to the inverse relationship with vitamin D levels and risk of bone fracture. Finally, vitamin D is also associated with testosterone levels in men as noted with seasonal fluctuations in testosterone levels, with peak values between March and August.

Earthlight™

Fitting with the rest of the Shake One™ formulation. The vitamin D is naturally sourced from a patented process of exposing light to wholesome Portobello mushrooms to enhance the natural production of vitamin D. This patented process yields 40,000 IUs of vitamin D per gram and is bioequivalent to other sources of vitamin D. A single dose of Shake One™ starts your day off with 52% of your total daily value of vitamin D, an excellent high-potency source of vitamin D.

CONCLUSION

In the groggy state of only initially beginning to function, many people rely on routines to get through the morning and out the door. Planning, prepping and thinking about all of the vitamins and nutrients you need to consume is not the first thing on your mind. Shake One™ relieves you of all that guess work, reduces the burden of making a full breakfast and eliminates a trip to the coffee shop before you get to your destination. Fully equipped with everything your body and mind need to optimize performance, optimize health and optimize your physique, Shake One™ is the only full complement morning health supplement on the market. Feel comfort that only

one scoop of Shake One™ will jump start your morning with adequate energy, mental clarity, muscle building, fat burning, and whole-body health maintenance all in one easy to drink delicious shake.

REFERENCES

1. Arentson-Lantz E, Clairmont S, Paddon-Jones D, Tremblay A, Elango R. Protein: A nutrient in focus. *Appl Physiol Nutr Metab.* 40(8); 755-761, 2015.
2. Areta JL, Burke LM, Ross ML, Camera DM, West DW, Broad EM, Jeacocke NA, Moore DR, Stellingwerff T, Phillips SM, Hawley JA, Coffey VG. Timing and distribution of protein ingestion during prolonged recovery from resistance exercise alters myofibrillar protein synthesis. *J Physiol.* 591; 2319-2331, 2013.
3. Carlson JL, Erickson JM, Lloyd BB, Slavin JL. Health Effects and Sources of Prebiotic Dietary Fiber. *Curr Dev Nutr.* 29(3); doi: 10.1093/cdn/nzy005, 2018.
4. Francis ST, Head K, Morris PG, Macdonald IA. The effect of flavanol-rich cocoa on the fMRI response to a cognitive task in healthy young people. *J Cardiovasc. Pharmacol.* 47; S215-220, 2006.
5. Gominak SC, Stumpf WE. The world epidemic of sleep disorders is linked to vitamin D deficiency. *Med Hypotheses.* 79(2); 132-135, 2012.
6. Heaney RP. The Vitamin D requirement in health and disease. *J Steroid Biochem Mol Biol.* 97; 13-19, 2005.
7. Huang W, Shah S, Long Q, Crankshaw AK, Tangpricha V. Improvement of pain, sleep, and quality of life in chronic pain patients with vitamin D supplementation. *Clin J Pain* 29(4); 314- 347, 2013.
8. Lambeau KV, McRorie JW. Fiber supplements and clinically proven health benefits: How to recognize and recommend an effective fiber therapy. *J Am Assoc Nurse Pract.* 29(4); 216-223, 2017.
9. Mamerow MM, Mettler JA, English KL, Casperson SL, Arentson-Lantz E, Sheffield-More M, et al. Dietary protein distribution positively influences 24-h muscle protein synthesis in healthy adults. *J Nutr.* 144(6); 876-880, 2014.
10. Marten B, Pfeuffer M, Schrezenmeir J. Medium-Chain triglycerides. *Int Dairy J.* 16(11); 1374-1384, 2006.
11. Mitani T, Watanabe Sm Yoshioka Y, Nakamura S, Ashida H. Theobromine suppresses adipogenesis through enhancement of CCAAT-enhancer-binding protein beta degradation by adenosine receptor A1. *BiochimBiophys Acta MOl Cewll Res.* 1864(12); 2438-2448, 2017.
12. Prentic A. Vitamin D deficiency: a global perspective. *Nutr Rev.* 66; S153-164,

- 2008.
13. Rial, SA, Karelis AD, Bergeron KF, Mounier C. Gut Microbiota and Metabolic Health: The Potential Beneficial Effects of a Medium Chain Triglyceride Diet in Obese Individuals. *Nutrients*. 8(5); 281 doi: 10.3390/nu8050281, 2016.
 14. St-Onge MP, Mayrsohn B, O’Keeffe M, Kissileff HR, Choudhury AR, Laferrere B. Impact of medium and long chain triglycerides consumption on appetite and food intake in overweight men. *Eur J Clin Nutr*. 68(O10); 1134-1140, 2014.
 15. Westerterp-Plantenga MS, Nieuwenhuizen A, Tome D, Soenen S, Westerterp KR. Dietary protein, weight loss, and weight maintenance. *Annu Rev Nutr*. 29; 21-41, 2009.