SPNutraceuticals™

metavo

WHITE PAPER

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Introduction

Avocados are a superfood that are part of a healthy diet. They have numerous health benefits and after several years of research, SP Nutraceuticals (SP Nutra) has found a way to harness these benefits to create a convenient and effective nutraceutical to help manage blood glucose and improve metabolism. Our flagship product, Metavo, contains AvoB™; a novel bioactive found only in some avocados, which we have shown to support glucose metabolism. Glucose metabolism is important in conditions like diabetes, which affects 1 in 16 people globally. In the U.S., approximately 80 million residents have prediabetes (high blood glucose levels), and it is estimated that 70% of these people will go on to develop type 2 diabetes (T2D). Lifestyle factors (diet and exercise) contribute to the development of T2D and interventions that include maintaining a healthy weight, eating nutritious foods and physical activity can mitigate the risks. By taking Metavo, you can take control back of your life through supporting your metabolism, naturally.

SPNutraceuticals™

SP Nutraceuticals (SP Nutra), the creator of Metavo, was co-founded by lawyer Christina Barbato and scientist Paul Spagnuolo. SP Nutra takes scientific discovery and transforms it into consumable products that can treat disease. The nutraceuticals developed by SP Nutra are novel, meaning before our scientists got to these molecules or compounds, no one knew how they treated or targeted a specific disease.

Metavo

Metavo is the only product on the market which contains AvoB™. Not all avocados are the same, and we have found that only a subset contain this powerful bioactive. Metavo contains freeze-dried avocado powder, guaranteed to contain AvoB™, which we have demonstrated to be safe and effective. Each daily dose of Metavo gives you the nutritional benefits of a traditional avocado plus the power of AvoB™. Metavo also contains chromium (C3+), an essential mineral which also helps maintain blood glucose levels. Together, AvoB™ and chromium can help support normal blood glucose levels and maintain healthy metabolism.

Chromium: The Perfect Sidekick

Chromium is an essential mineral that improves insulin action in the body. Chromium activates a protein known as chromodulin. Chromodulin increases insulin signalling which allows for more efficient glucose uptake.

- Helps to maintain normal blood glucose levels
- Supports the body's ability to metabolize nutrients

Avocado: The Favourite Fruit

Avocados are a nutrient dense fruit, containing nearly 20 vitamins, minerals and phytonutrients which contribute to managing heart health, weight and T2D. Avocados are the richest known fruit source of plant sterols, which block the absorption of dietary cholesterol to help manage healthy cholesterol levels. Furthermore, over 75% of fats in avocado are “good fats” (unsaturated) and studies have shown that replacing saturated and trans fats with good fats can help reduce the risk of heart disease. Avocados are also high in fiber and contain zero grams of sugar, making them a satiating food that can also lead to the maintenance of good health. Among the many phytonutrients in avocados is a powerful one known as AvoB ™; a novel bioactive that can help manage blood glucose levels.

AvoB™

Did you know?

Not all avocados are the same. We have found that only a subset of avocados contain AvoB™ and have thus developed a unique method to detect AvoB™ in avocados to ensure that all doses of Metavo contain a standard amount of this bioactive.

What is AvoB™?

AvoB™ is a bioactive that is found in avocados. Through years of research done by SP Nutraceuticals and Dr. Paul Spagnuolo, we isolated AvoB™ from avocados in order to better understand how it works. Through our studies, we found that AvoB™ can improve glucose metabolism by restoring insulin sensitivity. AvoB™ works by inhibiting fatty acid oxidation (FAO), preventing FAO overactivity and mitochondrial overload. In turn, metabolic flexibility and insulin sensitivity are restored. This allows for glucose uptake and oxidation to normalize, preventing the accumulation of glucose in the blood.

What is Type 2 Diabetes?

To survive, the body breaks down a sugar known as glucose into energy packed molecules known as adenosine triphosphate (ATP). After a meal, glucose enters the blood stream where it then must be taken up by the cell to be used. When glucose comes knocking on a cell's door, a 2 hormone known as insulin sends a signal to help bring glucose into the cell where it can be used through a process known as glucose oxidation. When a patient has type 2 diabetes (T2D), they become insensitive to this signal and develop a condition known as insulin resistance. With insulin resistance, glucose does not get taken into the cell as efficiently and instead builds up in the blood. Overtime, persistent elevation in blood glucose levels can lead to several complications which include damage to the heart, blood vessels, nerves, eyes, and kidneys. As such, it is imperative that patients with T2D monitor their blood glucose levels and undertake strategies to improve these levels to prevent progression to a more serious illness. With proper intervention, T2D can be a manageable disease.

Metabolic Syndrome

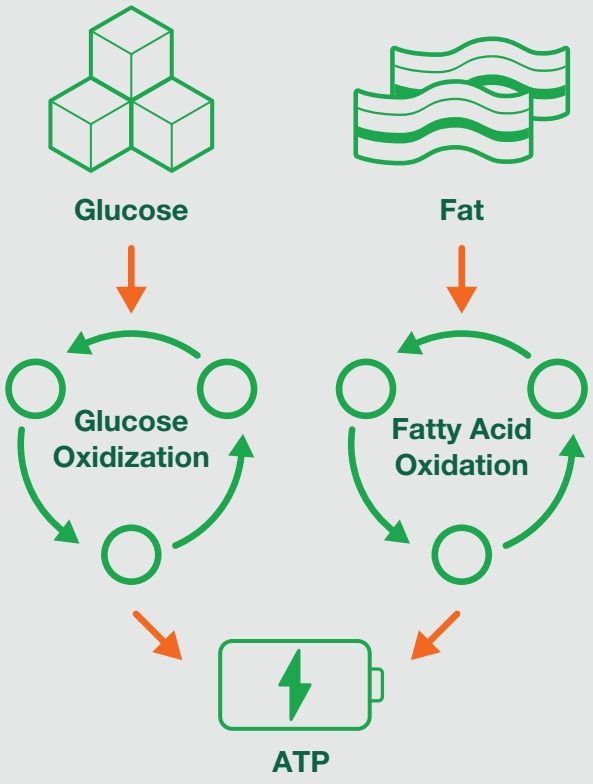
Metabolic syndrome is a set of factors that raise your risk of developing diabetes, heart disease or stroke. These risk factors include high levels of either triglycerides, LDL "bad" cholesterol, blood glucose and high blood pressure or a large waistline. A person has metabolic syndrome when they have three or more of these risk factors. A subset of patients with metabolic syndrome, are also classified as prediabetics. That is, they have elevated blood glucose levels which are not yet elevated enough to be classified as T2D. If left unmanaged, those with metabolic syndrome and/or prediabetes will go on to develop T2D and/or heart disease.

Glucose Oxidation

To obtain energy for daily tasks and maintain normal body function, the body must generate adenosine triphosphate (ATP), a molecule which acts as the energy currency of the cell. One of the ways we make ATP is by metabolizing the carbohydrate, glucose through a process known as glucose oxidation. After a carbohydrate-rich meal, blood glucose levels are elevated which causes insulin to signal for the cells to uptake this glucose and commence the process of glucose oxidation.

Metabolism

Every second, your body is undergoing thousands of chemical reactions. Metabolism is a general term used to describe the chemical reactions necessary to maintain life.



Fatty Acid Oxidation

But what happens when you eat foods rich in fat? Like glucose, fat molecules known as fatty acids can also be used to make ATP. This occurs through a metabolic process known as fatty acid oxidation (FAO). This process occurs in the mitochondria of the cell, which you likely already know is the “powerhouse” of the cell.

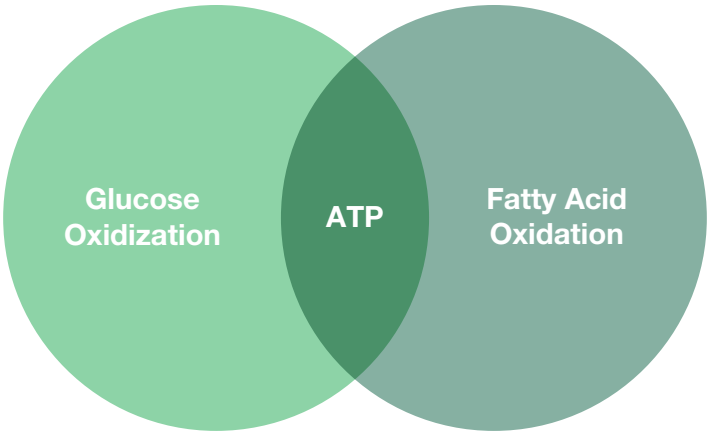
Glucose Oxidation

To glucose oxidation or to fatty acid oxidation? That is the question. Whether the body uses glucose or fatty acids to make ATP depends on the availability of each. In a healthy individual, your body will use glucose oxidation after a carbohydrate-rich meal and fatty acid oxidation after eating fats. The ability of the body to switch between these metabolic pathways is known as metabolic flexibility. This process is important in maintaining healthy metabolism and ATP levels. ATP is needed for every bodily function; from breathing to thinking to walking to exercising but like everything in life, we only need so much. But what happens when we eat more sugar and fats than the body needs? Well, it gets stored as fat. When typical fat deposits become oversaturated, excess fat gets stored in places where it normally does not belong, like the liver, pancreas, and skeletal muscle. This leads to inefficient metabolism in these tissues.

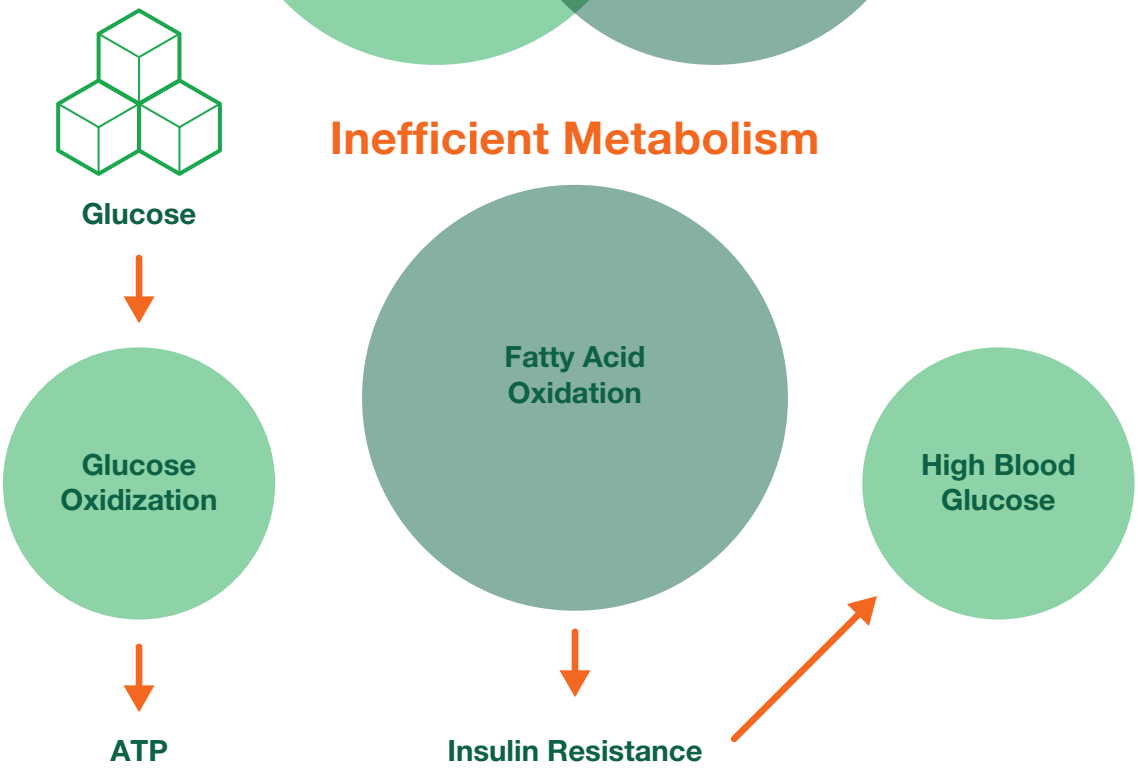
In an overweight individual, where fat stores are increased, FAO is kicked into high gear. This allows the body to breakdown these excess fats but also interferes with other metabolic processes. When processes are overactive, things can go wrong, and FAO is not exempt of this. In the state of overactive FAO, fats are not fully broken down like they would usually be. This is termed incomplete FAO which yields NO ATP and creates unwanted by-products. These by-products (known as toxic metabolites) impair the mitochondria and its function in a phenomenon known as mitochondrial overload. This mitochondrial overload impairs other processes and leads to metabolic inflexibility. You see, when FAO is overactive, tissues like the skeletal muscle and pancreas lose their metabolic flexibility. These tissues become so used to using FAO that they forget how to use other metabolic pathways like glucose oxidation. This poses a problem when glucose levels in the blood rise (for example: after a carbohydrate meal). Essentially, cells become so used to using FAO that they are desensitized to insulin signals which are needed to bring glucose into the cells. This leads to insulin resistance, elevated blood glucose levels and eventually T2D.

Considering this, it becomes clear why a healthy diet and exercise can help manage T2D and metabolic syndrome. Additional strategies that have been investigated include interventions which inhibit FAO to restore metabolic flexibility and the body's ability to undergo glucose oxidation.

Normal Metabolism



Inefficient Metabolism



Under normal circumstance, glucose oxidation and fatty acid oxidation are in harmony, and each process appropriately occurs when their respective substrate is available (glucose or fat). Both processes can work efficiently to generate ATP. In contrast when metabolism is disrupted due to high fat stores, fatty acid oxidation is overactive, leading to incomplete FAO and loss of ATP. This results in insulin resistance which hinders glucose uptake and oxidation. Consequently, blood glucose levels rise.

Glucose Oxidation

The progression of metabolic syndrome and T2D can be attributed to several risk factors; some of which can be mitigated through a nutritious diet and exercise. One such nutritious food is avocado, a powerful fruit whose inherent properties can contribute to heart health and weight management. With Metavo, consumers get the health benefits of avocado plus the effects of AvoB™ and chromium which work together to restore insulin sensitivity and blood glucose levels. In both a once-daily sachet and capsule format, the benefits of Metavo can be enjoyed in a convenient manner that suits the needs of all. Metavo supports metabolism. Naturally.

For more information or to purchase Metavo,
please contact info@spnutra.com
or visit www.metavo.com

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