The Scientific Basis for Metabolic Typing® - Part 2

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The Autonomic Nervous System (ANS)

The ANS along with the Endocrine System controls all of the automatic (or involuntary) functions within the body. Of course, when food is eaten, it is processed automatically through the gastrointestinal tract. All of the mechanical movements and biochemical secretions associated with this are under the control of the ANS. The ANS is the master regulator of metabolism. Therefore, if different people have diverse nutritional requirements, you would expect to find functional differences in the ANS and the associated endocrines -- and that is exactly what has been uncovered.

The ANS has two divisions: the Sympathetic and the Parasympathetic. Each works in opposition to the other, yet they work together to maintain homeostasis (metabolic balance and efficiency). Certain organs are "switched on" by the Sympathetic and "switched off" by the Parasympathetic, while other organs are "switched on" by the Parasympathetic and "switched off" by the Sympathetic. For example, Sympathetic nervous stimulation increases the heart rate, while Parasympathetic stimulation slows the heart rate. Hydrochloric acid secretion (and digestive function generally) is switched on by the Parasympathetic and switched off by the Sympathetic. (That's why it is important to eat in a relaxed atmosphere. Stress turns on the Sympathetic/Fight/Fright/Flight system, which turns off digestion).

Together, the Sympathetic and the Parasympathetic divisions work in an opposing yet, complementary manner to regulate heart rate and digestive secretions. In fact, the Sympathetic and Parasympathetic divisions of the ANS work together to regulate the functioning of all the various organs and glands. This relationship between the ANS and the endocrines is called the Neuro-Endocrine System.

Genetically-inherited strengths and weaknesses are expressed through the Neuro-Endocrine System. Some people have inherited stronger organs and glands that are stimulated by the Sympathetic division. In Metabolic Typing® these people are known as the Sympathetic Dominant Metabolic Types. Other people have inherited greater strength overall in the Parasympathetic organs and glands and are thus known as Parasympathetic Dominant Metabolic Types. People whose organs and glands are relatively balanced between Sympathetic and Parasympathetic influences are called Balanced Dominants.

It has been determined that different nutrients and different types of diets stimulate either the Sympathetic division or the Parasympathetic division. Dr. Francis Pottenger (1) was probably the first researcher to document how different nutrients stimulate one division or the other of the ANS.

Dr. William D. Kelley expanded upon Pottenger's work and formulated different Metabolic Types based on these differences in the ANS. If someone is a Sympathetic Dominant, the last thing they should do is consume more of the nutrients that stimulate the Sympathetic nerves and increase output of the Sympathetic innervated organs – that would only exacerbate the existing imbalance within the ANS and worsen existing symptoms as a result. Rather, Sympathetic types need to consume more of the nutrients that support and stimulate the Parasympathetic nerves, organs and glands.

Generally speaking, Sympathetic activity is stimulated by protein and Parasympathetic activity is stimulated by carbohydrate. This has been confirmed more recently by researchers in Australia (2). The genetically-inherited strengths and weaknesses in the ANS/Neuro-Endocrine System have a profound impact on individual nutritional requirements and Metabolic Typing® is the only system that fully takes them into account.

Cellular Oxidation

Cellular Oxidation is the process used by every living cell within the human body to produce energy. Many people think in terms of carbohydrate, protein and fat being used directly within the body. But, of course, these macronutrients have to go through a complex sequence of biochemical reactions in order to produce energy in the currency that the body can use. This actual useable energy is adenosine triphosphate (ATP). Dr. George Watson (3) discovered that there are great variance in the way people convert foods into useable energy through cellular oxidation.

About 20 percent of the potential energy created from food comes from the combustion of carbohydrates in glycolysis. The other potential 80 percent comes from the citric acid cycle. This is illustrated in Figure 1. In simple terms, energy is produced in the citric acid cycle from a combination of the right amount of oxaloacetate (from the combustion of carbohydrates in glycolysis) and the right amount of acetyl coenzyme-A (from the metabolism of fats in beta oxidation). If there is too much oxaloacetate and not enough acetyl coenzyme-A, or if there is too much acetyl coenzyme-A and not enough oxaloacetate, then energy production is deficient.

Some people are Fast Oxidizers - they are poor at metabolizing fats and producing acetyl coenzyme-A from beta oxidation, and so they are overly reliant on the combustion of carbohydrates in glycolysis for energy production.

Fast Oxidizers tend to burn carbohydrates too quickly and as a result they produce excess oxaloacetate. A high carbohydrate diet only worsens the problem. But, increased amounts of fats and proteins (dietary raw materials for the production of acetyl coenzyme-A) help balance their chemistries and maximize their energy production.

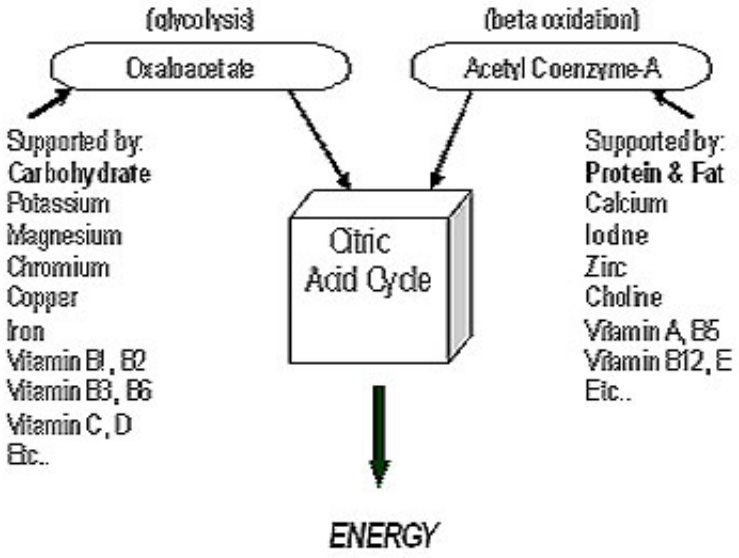

Figure 1

Slow Oxidizers have the same problem as Fast Oxidizers - deficient energy production - but for the exact opposite reasons. Slow Oxidizers are overly reliant on fat metabolism in beta oxidation, so they produce excess acetyl coenzyme-A, but they are poor at carbohydrate combustion in glycolysis, and tend to be deficient in the production of oxaloacetate.

Unlike Fast Oxidizers, Slow Oxidizers do well on higher carbohydrate intakes (dietary raw materials for oxaloacetate) with less protein and fat in their diets' (sources of acetyl coenzyme-A).

In addition to a need for different macronutrient ratios for optimal energy production, Fast Oxidizers and Slow Oxidizers also require different types of foods. For example, the metabolism of a Fast Oxidizer is well-suited to higher fat, high-purine proteins such as: anchovies, herring, liver, kidney, pate, mussels, sardines and other meats. These proteins yield the purine adenine – which is a very important part of ATP. Purine is also slow burning, which is ideal for the overly fast oxidation rate of Fast Oxidizers.

It can also be seen from Figure 1 that the two different sides of cellular oxidation require very different sets of nutrients. Slow Oxidizers need more support for glycolysis (combustion of carbohydrates), and this is supported by potassium, magnesium, vitamin B1, vitamin C, etc.

Fast Oxidizers, on the other hand, need more support for beta oxidation (combustion of proteins and fats), and this is supported by calcium, zinc, vitamin A, vitamin E, etc.

In short, Fast Oxidizers and Slow Oxidizers require very different diets in terms of the macro and micro nutrients. Although these differences in metabolism were scientifically evaluated by Dr Watson several decades ago, again, dieticians have chosen to ignore them. Metabolic Typing® is the only nutritional approach that takes into consideration these differences in cellular energy production.

The Metabolic Typing® Assessment

The ANS and cellular oxidation have such a fundamental influence on metabolism that specific characteristics can be attributed to any imbalance that exists. Someone who is more influenced by the Sympathetic division of the ANS will exhibit a different set of characteristics to someone who is more influenced by the Parasympathetic division. This is also the case for Fast Oxidizers and Slow Oxidizers. Table 1 lists a few of the characteristics associated with each Metabolic Type®.

Parasympathetic Type	Sympathetic Type	Fast Oxidiser	Slow Oxidiser
Strong Digestion	Weak Digestion	Strong Appetite	Weak Appetite
Moist / Oily Skin	Dry Skin	Low Blood Sugar	Normal Blood Sugar
Short in Height	Tall in Height	Has to Eat Regularly	Can Skip Meals
Good Athletic Recovery	Good Athletic Speed	Fast Tissue Healing	Slow Tissue Healing
Slow Breathing Rate	Fast Breathing Rate	Severe Reaction to Insect Bites	Small Reaction to Insect Bites
Type 'B' Personality	Type 'A' Personality	Type 'A' Personality	Type 'B' Personality
Calm / Relaxed Disposition	Hyper / Nervous Disposition	Lives in the Future	Lives in the Past

Table 1

Table 1 is useful for illustrative purposes only. In reality, there are many more characteristics associated with each type. The full set of characteristics can be assessed for each person via the use of a comprehensive, computer-evaluated questionnaire. This is the basis for the Metabolic Typing® Assessment.

Some people are uncomfortable with the idea of using a questionnaire for determining the Metabolic Type®, however, this is in fact the only way that it can be done. The reason for this is that no one is a pure type as everyone has influences from Parasympathetic stimulation, Sympathetic stimulation, beta oxidation and glycolysis. But, the strengths and weaknesses in these systems will always show through in the participants unique set, or unique combination, of personal characteristics. No lab tests can reliably determine these influences or more importantly, the dominant system, which ultimately determines one's Metabolic Type®.

The first questionnaire and computer model designed to do this involved around 3000 questions. However, the process has been refined through empirical evaluations with many thousands of people. This work has been completed over more than 30 years of research by William Wolcott of Healthexcel.

Healthexcel has developed the system and made it much more practical by establishing the questions that really matter when working out a person's Metabolic Type®. The advanced assessment now involves around 165 key questions.

William Wolcott also discovered the Dominance Factor (4). This is a critically important discovery. In each person, either the ANS or Cellular Oxidation will be dominant. This has profound implications for nutritional requirements since the dominant system dictates how nutrients affect the body -- stimulating or sedating, acidifying or alkalinizing.

For example, eating an orange or ingesting a potassium tablet will alkalinize the Autonomic Dominant person by stimulating the Parasympathetic System. But, in an Oxidative Dominant, the same food or nutrient will have the opposite effect – it will acidify by increasing the rate of carbohydrate oxidation, resulting in increased levels of CO_2 and carbonic acid.

From Metabolic Typing®, therefore, it has been learned that the acidifying or alkalinizing effects of foods and nutrients are due not so much to inherent qualities in the substances, but rather from the affects the substance has on the specific fundamental homeostatic control mechanism dominant in the individual.

The Rest of the Story

Originally, Metabolic Typing® began as a one dimensional model involving only the ANS back in the mid 1970's. Over the last three decades, based on continual new research developments, advances in technology, the clinical application of thousands of practitioners and the empirical observations of hundreds of thousands of patients, Metabolic Typing® has evolved to encompass eleven fundamental homeostatic control mechanisms.

Together, the analysis of these control mechanisms greatly improves the ability to define the genetic expressions of metabolic individuality, and thereby individual nutritional requirements. Additions to the methodology in recent years include Neurotransmitter Balance (brain function via urine testing), Catabolic / Anabolic Balance (aerobic/anaerobic metabolism via pH testing), Steroidal Hormone Balance (Cortisol vs. DHEA pathways via saliva testing) and Mediator Release (food sensitivities via blood testing).

The secret to good health, fulfilling potential, and maximizing performance, energy and well-being is that there never has been and there never will be one diet that is right for everyone. The only "magic bullet" of nutrition is the diet (and supplementation) that fulfils each individual's genetically-based requirements. Meet those requirements and you'll have dynamic, radiant good health for a lifetime. Failure to meet those requirements can result in the increased risk for devastating, and unnecessary, onslaught of degenerative disease. The only way to determine genetically-based individual requirements for nutrition is through the evaluation of the fundamental homoeostatic control mechanisms mentioned above via the proper application of genuine Metabolic Typing®.

REFERENCES

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