How a Dietary Protein Nutritional Value Is Currently Evaluated

How a Dietary Protein Nutritional Value

Is Currently Established

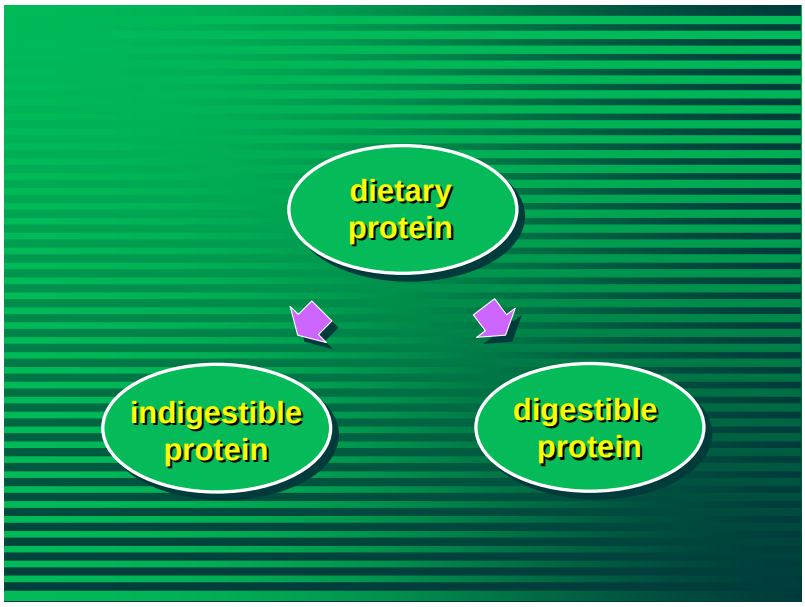

Fig. 1. A dietary protein can be either *indigestible* or *digestible*.

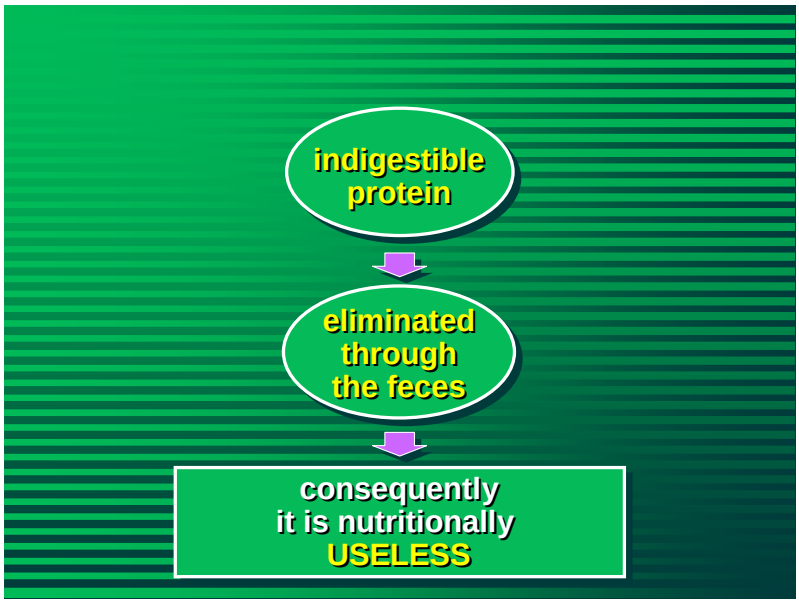

Fig. 2. A protein is indigestible when it is eliminated through the feces. Consequently it is nutritionally *useless*.

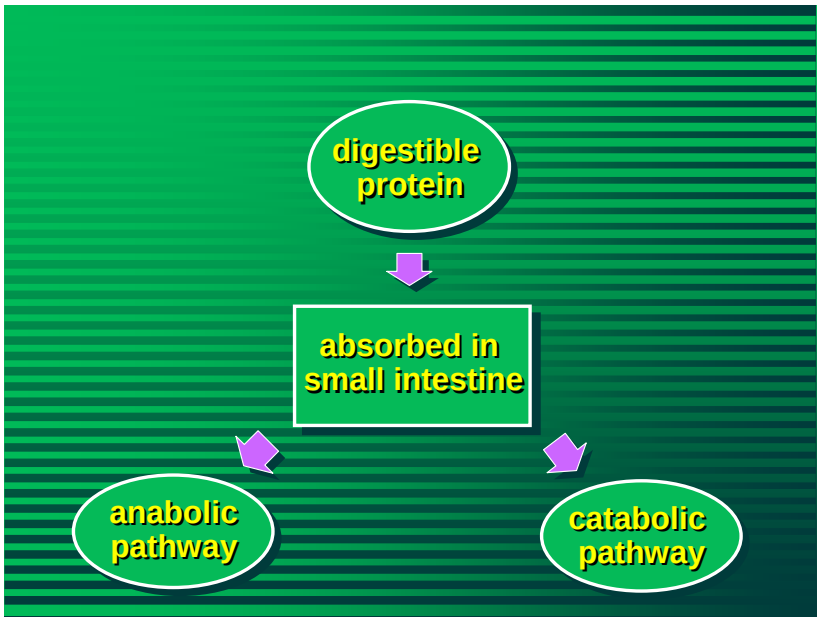

Fig. 3. On the contrary, a dietary protein is digestible, when it is enzymatically hydrolyzed during the digestive tract thus releasing its constituent amino acids in the first 100cm of the small intestine, where they are absorbed. Then, those amino acids can follow either the *anabolic* or the *catabolic* pathway.

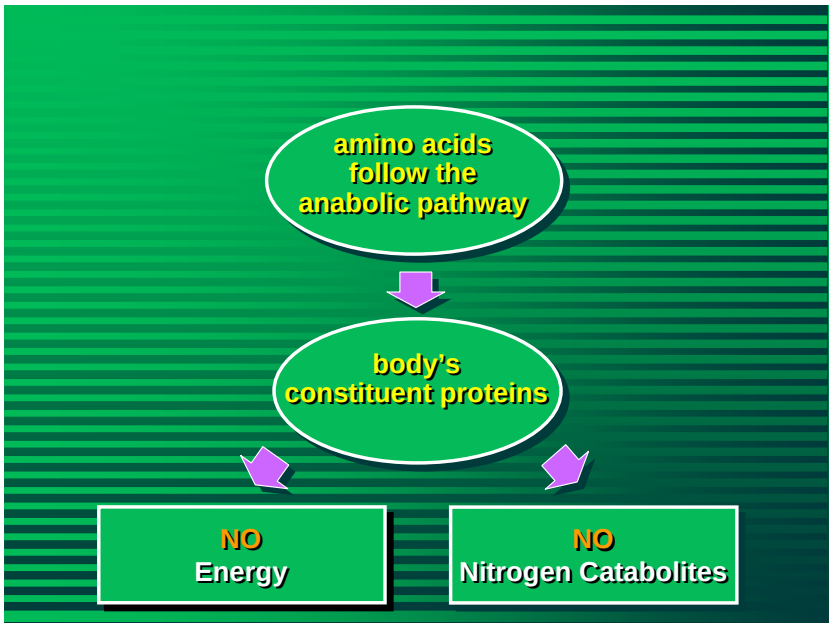

Fig. 4. When amino acids follow the *anabolic* pathway they act as precursors of Body Protein Synthesis (BPS), which is their primary function, thus becoming the body's constituent proteins. Throughout the anabolic pathway *no energy* or *nitrogen catabolites* are released.

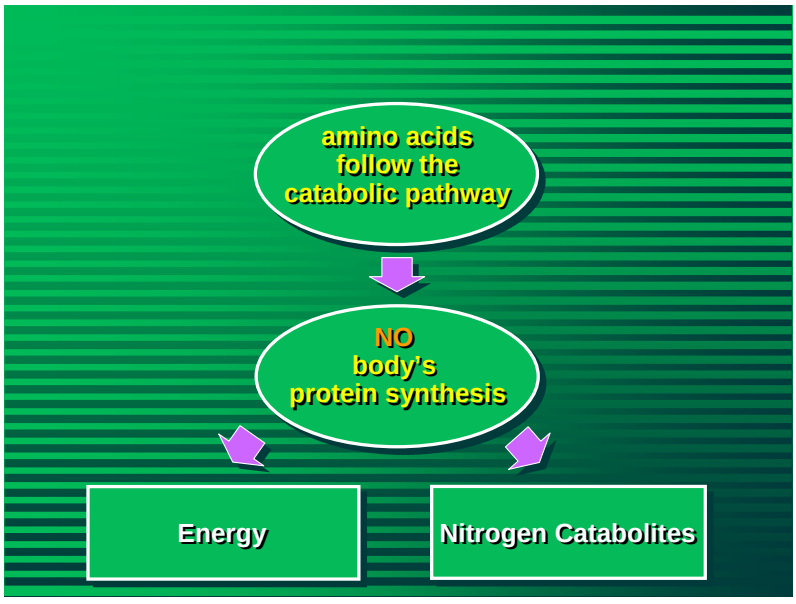

Fig. 5. On the contrary, when amino acids follow the *catabolic* pathway they are deaminated, which is their secondary function. Therefore, they cannot act as precursors of BPS. Throughout the catabolic pathway *energy* and *nitrogen catabolites* are released.

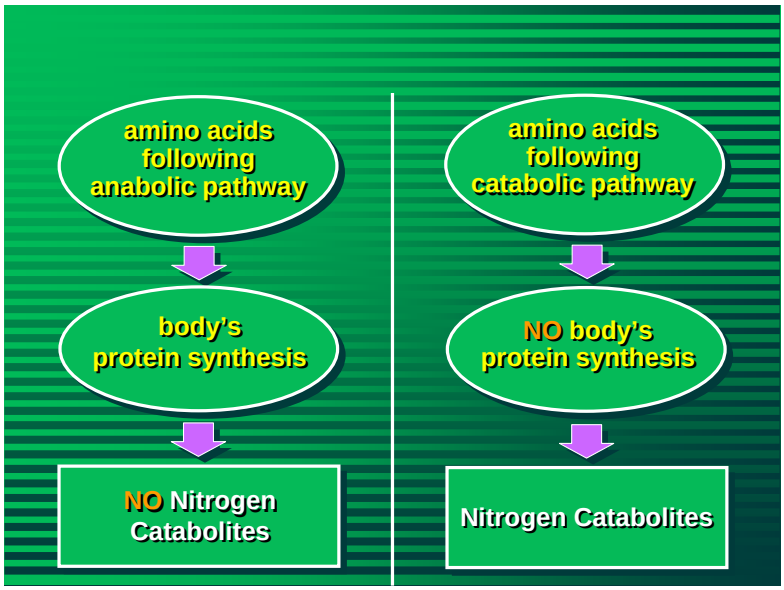

Fig. 6. It should be noticed that the *anabolic* pathway has two main *positive* characteristics: It provides BPS and it does not provide any nitrogen catabolites. On the contrary, the *catabolic* pathway has two main *negative* characteristics: It cannot provide BPS and it does provide nitrogen catabolites, which are metabolic toxic waste.

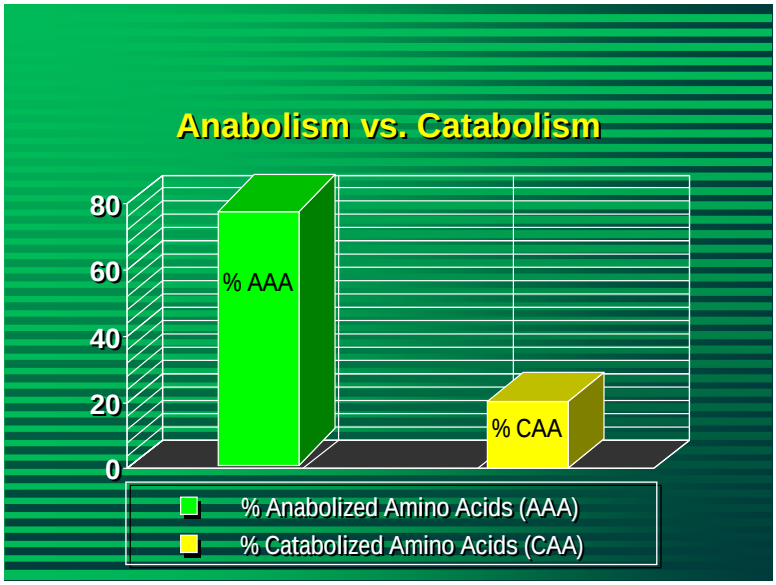

Chart 1. The percentage of a protein's anabolized amino acids is *inversely proportional* to that of those catabolized. Therefore, the higher the percentage of AAA, the lower that of CAA and vice versa.

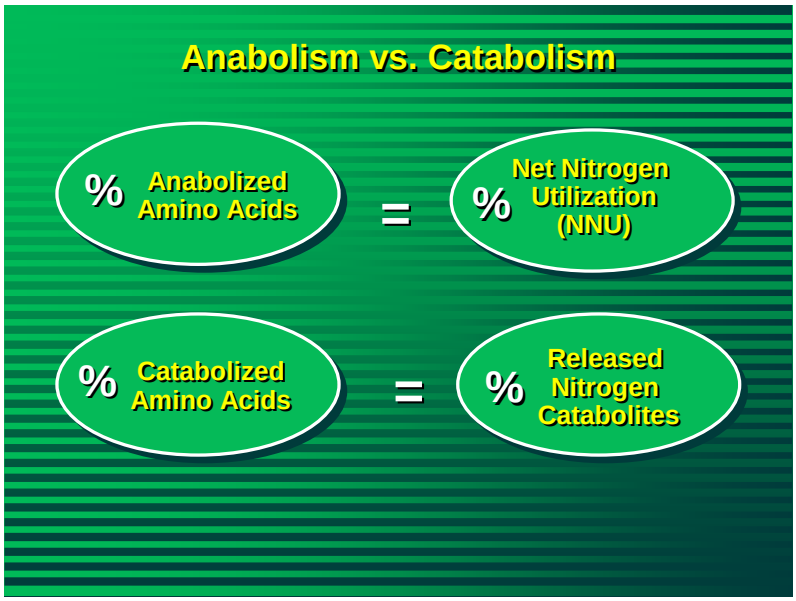

Fig. 7. The percentage of amino acids following the anabolic pathway, to act as precursors of BPS *is equal* to its Net Nitrogen Utilization (NNU). Meanwhile, the percentage of amino acids following the catabolic pathway *is equal* to the percentage of released nitrogen catabolites.

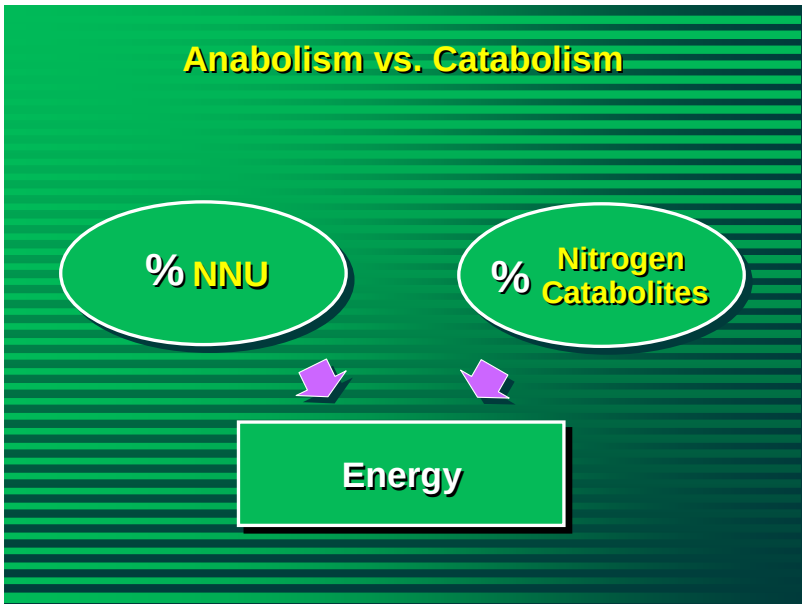

Fig. 8. Thus, by knowing a protein's percentage of NNU or released Nitrogen Catabolites, its released *amount of energy* can be determined.

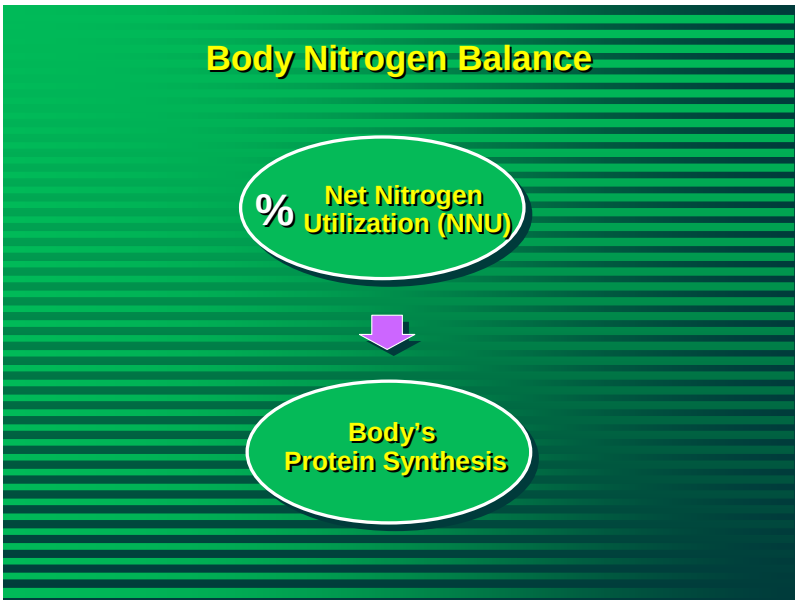

Fig. 9. A protein NNU is the *unit of measurement* for BPS. It is calculated through a methodology known as "body nitrogen balance".

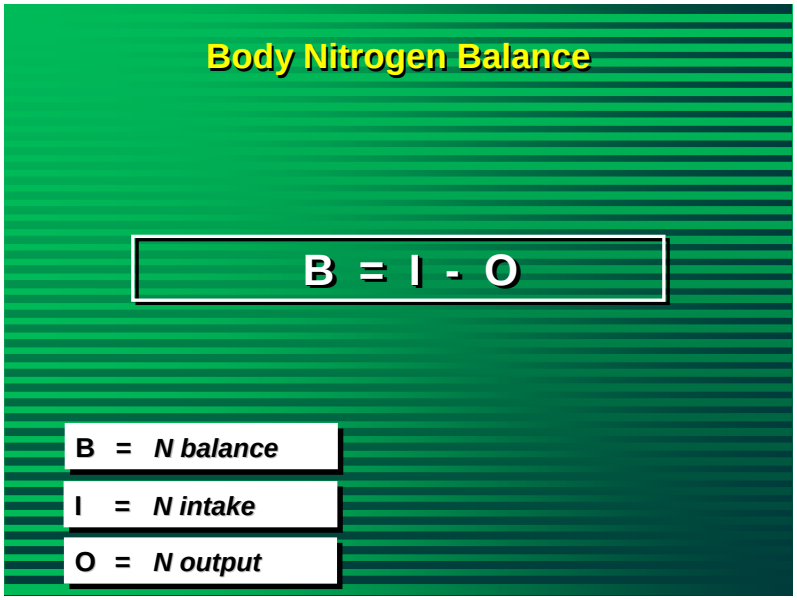

Fig.10. The body nitrogen balance has been a fundamental analytical technique during the last 160 years. It can be applied by using the shown equation: where "B" is equal to nitrogen balance; "I" is equal to Nitrogen Intake proceeding from dietary proteins; and "O" is equal to Nitrogen Output.

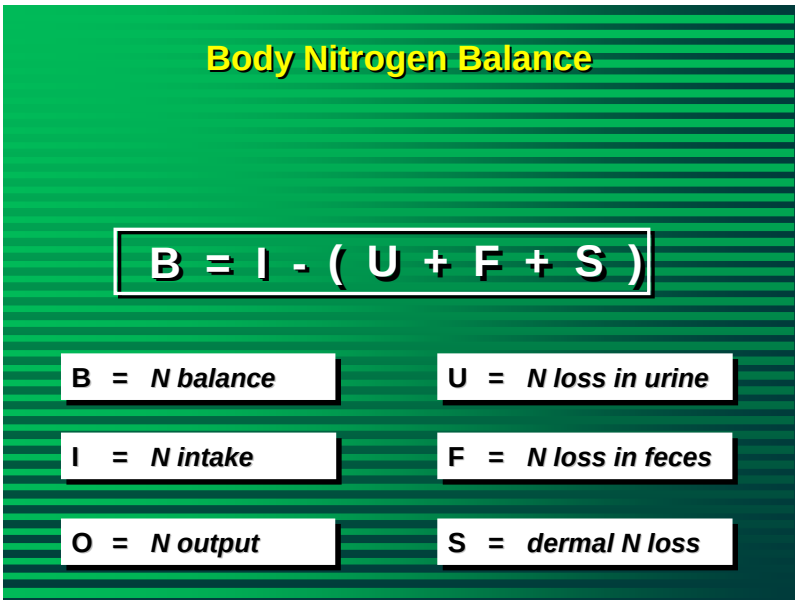

Fig. 11. "O" in turn is the sum of U + F + S: where "U" is equal to Nitrogen loss in urine; “F" is equal to Nitrogen loss in feces; and "S" is equal to the dermal Nitrogen loss.

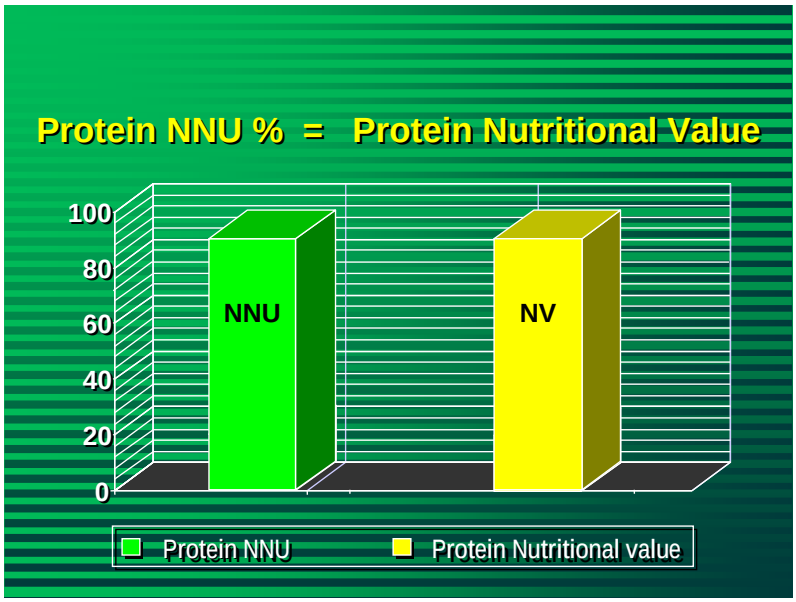

Chart 2. A protein's NNU for BPS, *represents* its nutritional value. Thus the higher its NNU, the higher its nutritional value and vice versa.

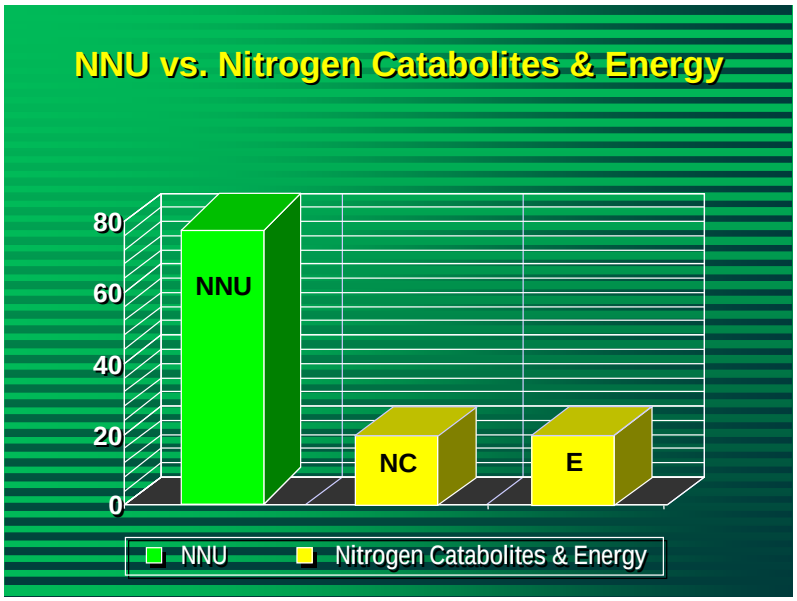

Chart 3. Meanwhile, a protein NNU is *inversely proportional* to the amounts of nitrogen catabolites and energy that it releases. Therefore, the higher a protein NNU, the lower its released amounts of nitrogen catabolites and energy; and vice versa.

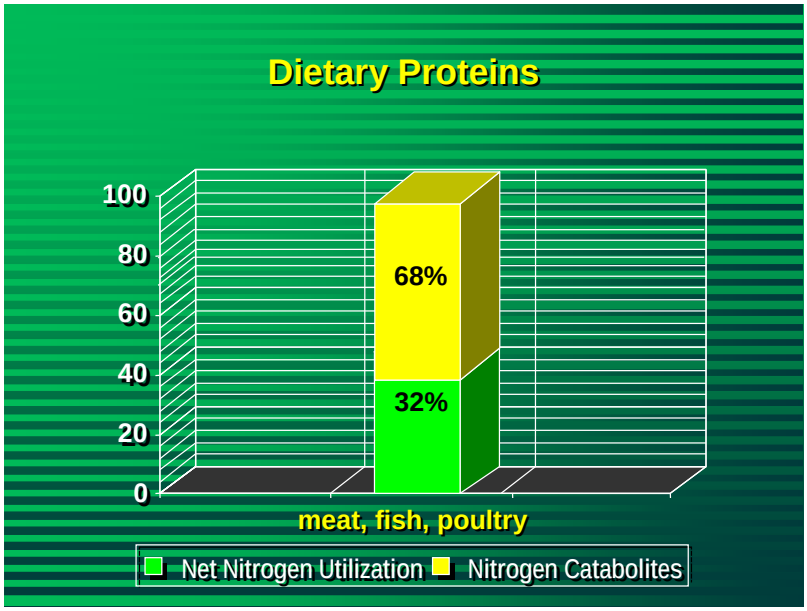

Chart 4. To illustrate: the most nutritious dietary proteins, such as meat, fish or poultry provide an average of 32% NNU. This means that *only 32%* of their constituent amino acids *act as precursors of BPS*, to become body's constituent. Meanwhile, the remaining 68% are catabolized, thus releasing nitrogen catabolites and energy.

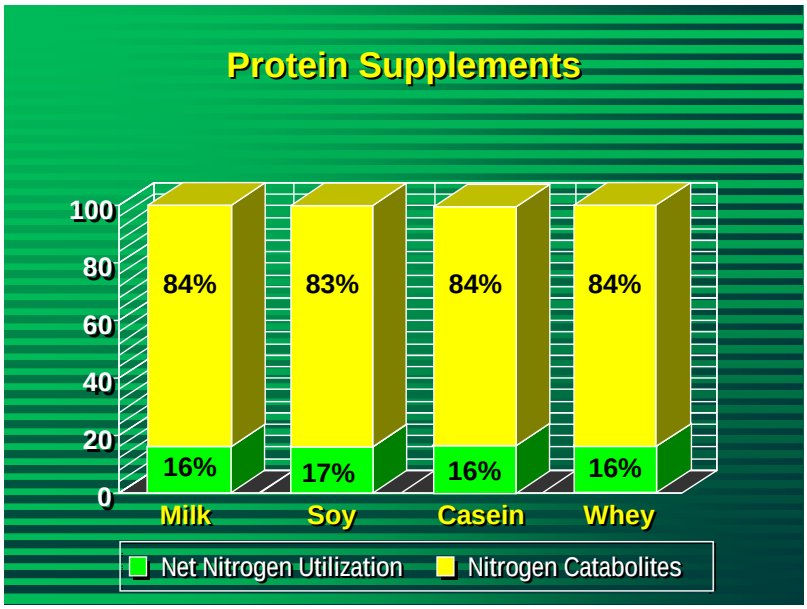

Chart 5. On the other hand, milk, soy, casein or whey (the main proteins found in most protein supplements), only provide an average of 16% NNU. This means that *only 16%* of their constituent amino acids *act as precursors of BPS*. Meanwhile, the remaining 84% are catabolized, thus releasing nitrogen catabolites and energy.

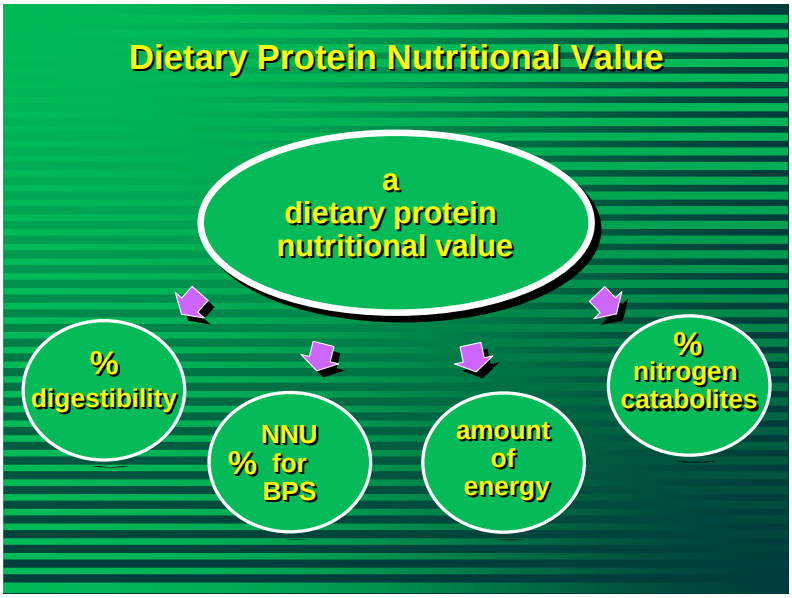

Fig. 12. To conclude, a dietary protein nutritional value can be evaluated by four parameters: the *percentage of its digestibility*, the *percentage of its NNU* for BPS, the *amount of its released energy*, and the *percentage of its released nitrogen catabolites*.

THE CHARACTERISTICS OF THE MASTER AMINO ACID PATTERN - MAP®

MAP™ is composed of a patented (U.S. Patent No. 5,132,113), unique pattern of highly purified, free, crystalline essential amino acids.

Clinical studies have shown that MAP™ can substitute dietary proteins or protein supplements in a safer and nutritionally more efficient way.

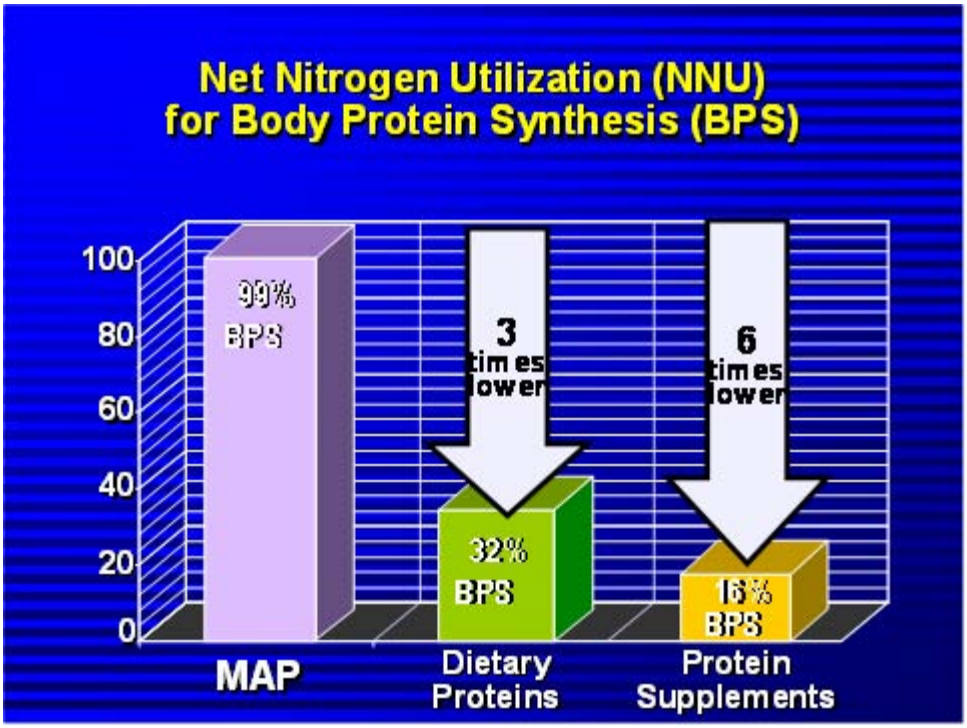

Chart 6. Net Nitrogen Utilization (NNU) for Body Protein Synthesis (BPS)

MAP™ provides a 99% Net Nitrogen Utilization or NNU. This means that 99% of MAP's constituent amino acids act as precursors of BPS, to become body's constituent proteins. By comparison, the most nutritious dietary proteins, such as meat, fish or poultry provide an average of 32% NNU. Consequently, only 32% of their constituent amino acids can act as precursors of BPS. Meanwhile, most protein

supplements only provide an average of 16% NNU - because they use milk, soy, casein or whey as their primary protein source. As a result, only 16% of their constituent amino acids act as precursors of BPS. Therefore, *dietary proteins provide a BPS that is at least 3 times lower*, compared to MAP™. Meanwhile, *protein supplements provide a BPS that is at least 6 times lower*, compared to MAP™

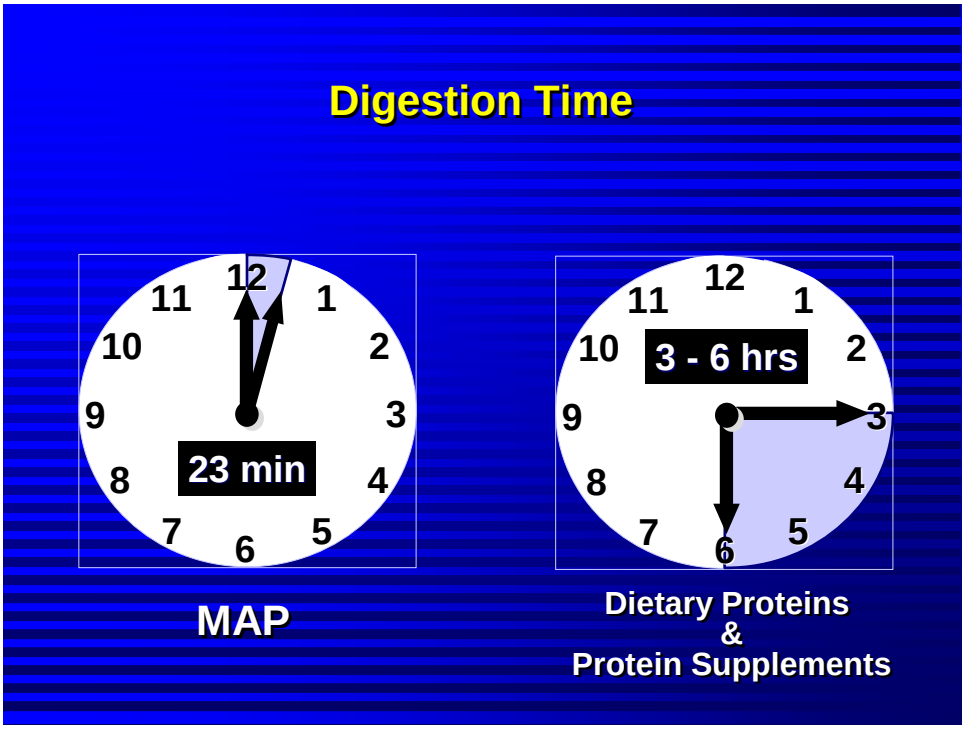

Fig. 13. MAP™ is *absorbed* in the small intestine *within 23 minutes* from its ingestion. By comparison, dietary proteins and protein supplements need from *3 to 6 hours* to be digested. This is *6 to 12 times longer* compared to MAP™.

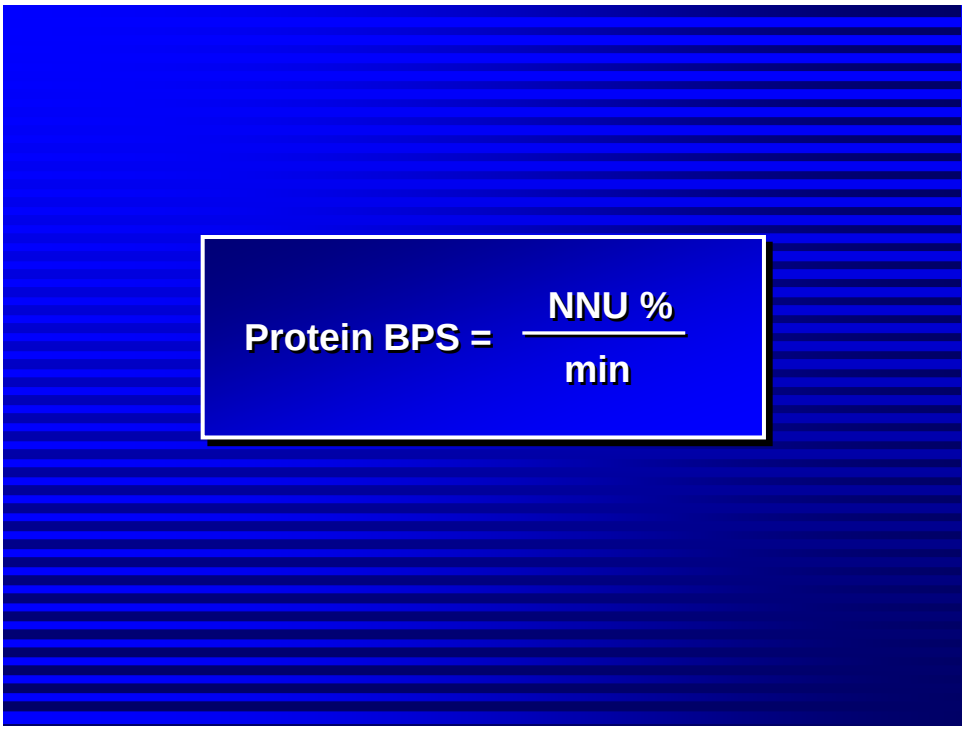

Fig. 14. By knowing a protein's NNU(%) and its digestion time(min), a protein BPS/min ratio can be calculated.

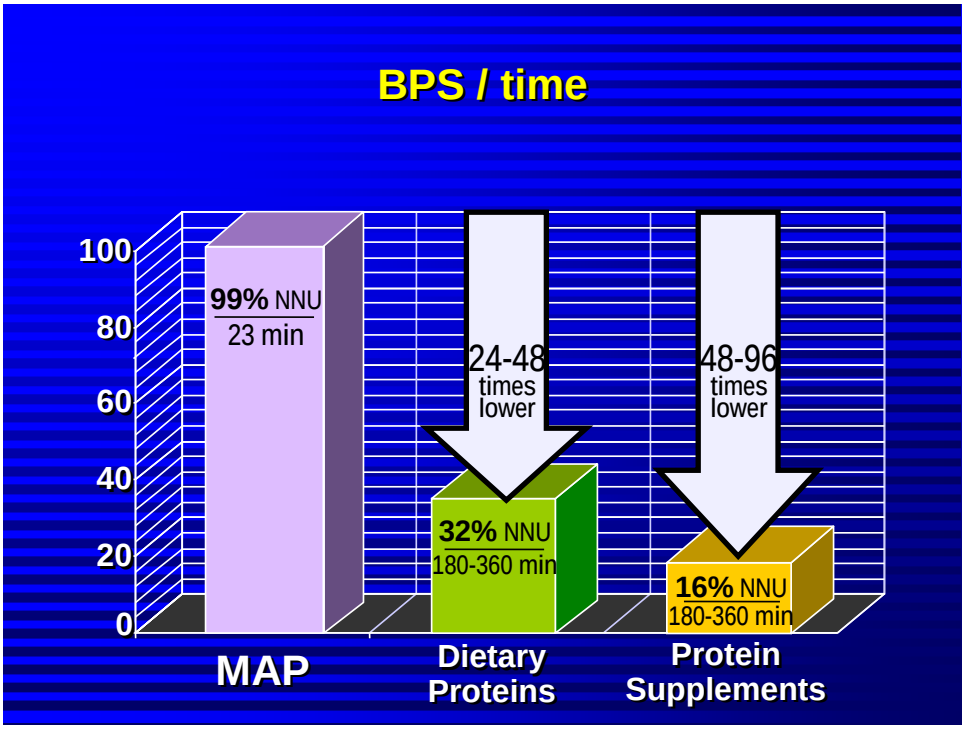

Chart 7. MAP's , BPS/min ratio, is equal to *99% NNU/ 23 min*.

By comparison the most nutritious dietary proteins have a ratio of 32% NNU/180-360 min. This means that the BPS/min ratio of dietary proteins is *24 to 48 times lower* compared to MAP™. Meanwhile, protein supplements have a ratio of 16% NNU/180-360 minutes. This means that the BPS/min ratio of protein supplements is *48 to 96 times lower* compared to MAP™.

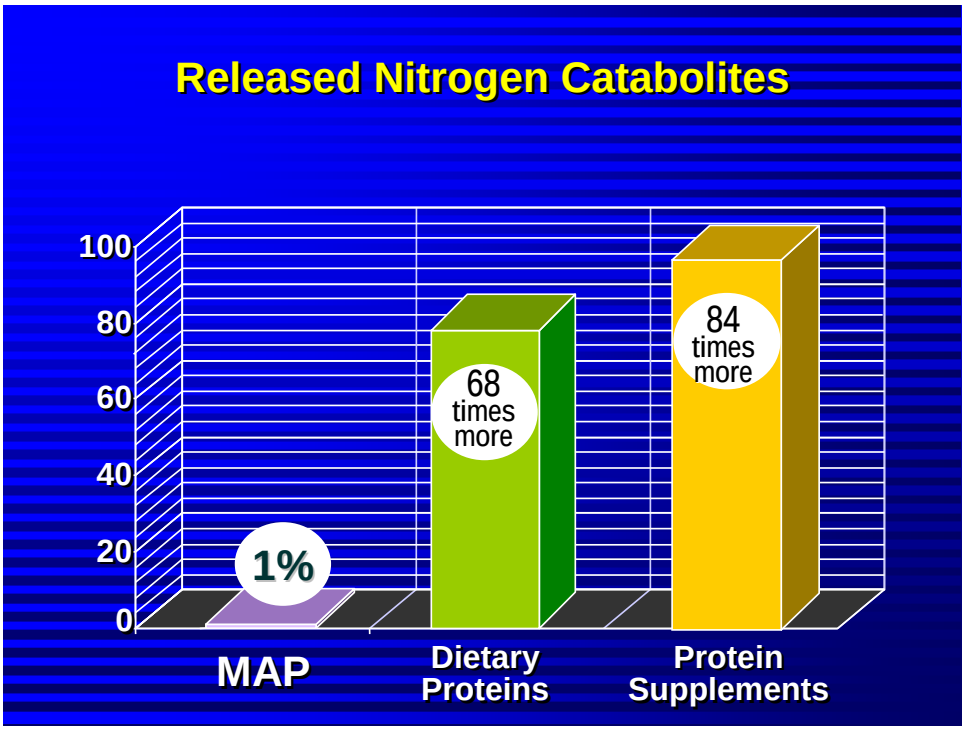

Chart 8. MAP™ releases only 1% nitrogen catabolites, namely metabolic toxic waste. By comparison, dietary proteins release an average of 68% nitrogen catabolites. This is *68 times more* metabolic toxic waste compared to MAP™. Meanwhile, protein supplements release 84% nitrogen catabolites, which is *84 times more* metabolic toxic waste when compared to MAP™.

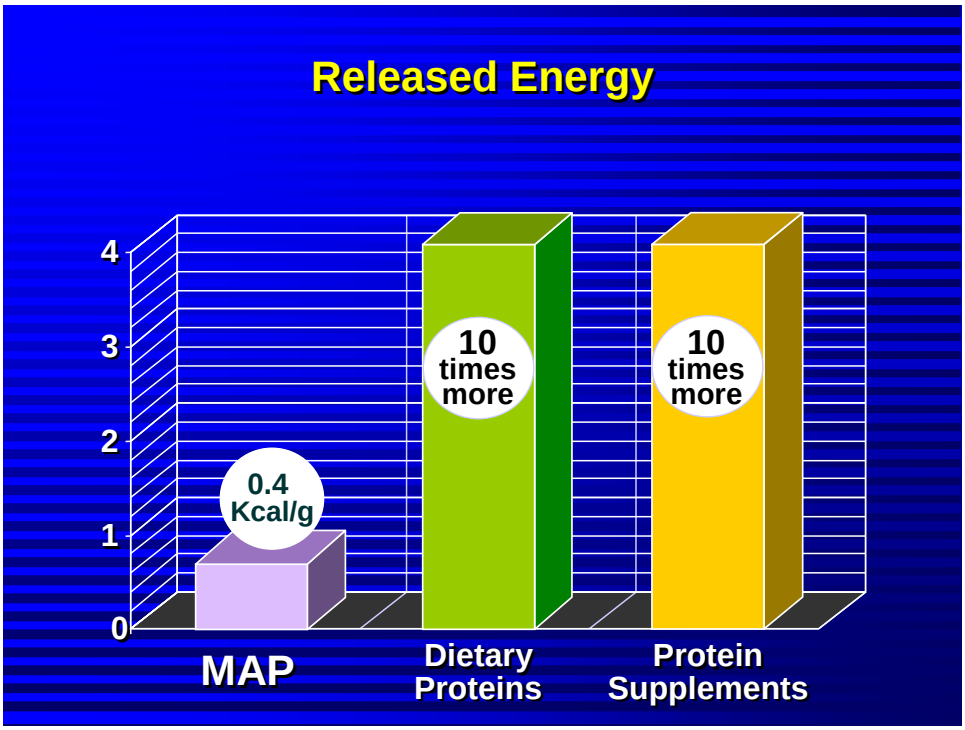

Chart 9. MAP™ provides only 0.4 Kcal/g. By comparison, dietary proteins or protein supplements provide a minimum of 4 Kcal/g. This is at least *10 times more calories*, when compared to MAP™.

In contrast with dietary proteins and protein supplements, MAP™ is 100% *sodium free; fat free; and sugar free.*

MAP™ is amphoteric and it does not release any fecal residue. In addition, MAP™ is 100% natural.

The use of MAP™, due to its unique characteristics, is recommended in substitution of dietary proteins or protein supplements, during:

Alcoholism

To optimize BPS, while minimizing the release of Nitrogen Catabolites (NC); to decrease excessive water retention and control calorie intake.

Anorexia

To optimize BPS, while minimizing the release of NC; to decrease excessive water retention and control calorie intake.

Bulimia

To optimize BPS, while minimizing the release of NC; to decrease excessive water retention and control calorie intake.

Cardiovascular Disorders

To optimize BPS, while minimizing the release of NC; to reduce the digestive loading and to control sodium and fat intake.

Chemotherapy

To optimize BPS, while minimizing the release of NC.

Degenerative Diseases

To optimize BPS, while minimizing the release of NC.

Diabetes (Type I and II)

To optimize BPS, while minimizing the release of NC, thus also minimizing the levels of hyperglycemia and Blood Urea Nitrogen (BUN).

Diarrhea

To optimize BPS, while minimizing the release of NC; and to control Fecal Residue.

Food Allergies

To optimize BPS, while minimizing the release of NC.

Gastrointestinal Disorders

To optimize BPS, while minimizing the release of NC; to reduce the digestive loading and to control fecal residue.

Hepatic Impaired Function

To optimize BPS, while minimizing the release of NC, thus also minimizing the Blood-Ammonia level.

Hypercholesterolemia

To optimize BPS, while minimizing the release of NC; and to control fat Intake

Iron Deficiency Anemia

To optimize BPS while minimizing the release of NC.

Osteoporosis

To optimize BPS while minimizing the release of NC.

Overweight Prevention

To optimize BPS, while minimizing the release of NC; to decrease excessive water retention and control calorie intake.

Physical Rehabilitation

To optimize BPS, while minimizing the release of NC.

Post-Trauma Recovery

To optimize BPS, while minimizing the release of NC; and to decrease excessive water retention.

Pregnancy

To optimize BPS, while minimizing the release of NC; and to decrease excessive water retention and minimize the level of BUN.

Pre- Post-Surgery Periods

To optimize BPS, while minimizing the release of NC; and to decrease excessive water retention and avoid dietary fecal residue.

Protein-Energy Malnutrition

To optimize BPS, while minimizing the release of NC; and to decrease excessive water retention.

Physical Rehabilitation

To optimize BPS, while minimizing the release of NC.

Renal Impaired Function

To optimize BPS, while minimizing the release of NC, thus also minimizing BUN; and to control any mineral Intake.

Vegetarianism

To optimize BPS while minimizing the release of NC; and to decrease excessive water retention.

Weight Loss Diets

To optimize BPS, while minimizing the release of NC; to decrease excessive water retention and control calorie intake.

Indications & Usage

MAP™ is indicated as a safe and effective substitute for dietary proteins.

Adverse Reactions

No adverse reactions have been ever reported.

Over Dosage

No adverse reactions have been ever reported.

Dosage & Administration

MAP™ should be orally administered, preferably with food. To calculate the dosage of MAP™ necessary to substitute dietary proteins it should be considered that: 1 tablet of MAP™ can safely and effectively substitute at least 3g of the most nutritious dietary protein or 6g of milk, soy, casein or whey

protein – which are the main protein sources of protein supplements.

How Supplied

MAP™ is supplied in bottles of 100 tablets of 1000 mg for oral administration.

Currently, MAP™ is available under the brand name of: **SON Formula**®. *Each tablet of* SON Formula®, *in addition to the active ingredient* Master Amino Acid Pattern MAP®, *does not contain any inactive ingredients.*