Think Muscle Newsletter

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The Think Muscle Newsletter publishes the latest news and research on exercise physiology, dietary supplements, performance enhancement, lifestyle management, health & nutrition, and bodybuilding & fitness. The newsletter is dedicated to providing accurate and unbiased scientifically based information.

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Message from Our Sponsor

After six years of research, Michael Mooney and Nelson Vergel have published their book, "Built to Survive." By word of mouth and through the Medibolics website at http://www.medibolics.com, they have sold close to 4,000 books and raised over $47,000 for Body Positive Wellness Center (http://www.bodypositivehouston.com), a non-profit research and education center for people with HIV in Houston. Michael and Nelson have donated all profits from their book to fund this prototype project so that centers like this can be duplicated across the country. Please inform everyone you know who is HIV positive about the life-changing information in this book. Built to Survive is a comprehensive guide to the medical use of anabolic steroids, nutrition and exercise for HIV(+) men and women. Built to Survive can be purchased online at http://www.beyondmuscle.com/ and http://www.amazon.com/

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Going on a Diet? The Protein Supplement You Choose Might Make a Big Difference

By Bryan Haycock, MS, CSCS
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Everybody knows that when you go on a diet, consuming a bit more protein will help you hold on to hard earned muscle. The reason for this is that, skeletal muscle is your body's main "store" of protein and when food is scarce the body uses this protein for glucose (sugar) production. You can blame your brain for this. You see, your brain and central nervous system rely almost entirely on glucose for energy, fat is out of the question. In order not to slip into a hypoglycemic stupor, or even worse, a coma, the body has set up a system that goes around breaking down muscle tissue in order to feed its glucose manufacturing centers in the liver. A necessary evil I guess.

So does the type of protein you eat make any difference in how much muscle you save during a diet? Apparently it does. In a recent study in the Annals of Nutrition and Metabolism, they compared the effects of a moderate diet, high-protein diet and resistance training, using two different protein supplements, or the diet alone on body compositional changes in overweight police officers (1). It was a randomized 12-week study. One group was placed on a hypocaloric diet alone (80% of maintenance). A second group was placed on the hypocaloric diet plus resistance exercise plus a high-protein intake (1.5 g/kg/day) using a casein protein hydrolysate. In the third group treatment was identical to the second, except for the use of a whey protein hydrolysate. They found no difference in total weight loss between groups (about 5.5 lbs. for all groups). Mean percent body fat with diet alone decreased from 27 to about 25% at 12 weeks. With diet, exercise and casein the decrease was from 26 to about 18%, and with diet, exercise and whey protein the decrease was from 27 to about 23%. So the mean fat loss was 2.5 (no protein supplement), 7.0 (casein supplement) and 4.2 kg (whey supplement) in the three groups. Lean mass gains in the three groups did not change for diet alone, versus gains of about 4 kg in the casein group and 2 kg in the whey group. Mean increase in strength for chest, shoulder and legs was 59% for casein versus 29% for whey, a statistically significant difference.

I will admit I was really surprised to see such dramatic differences between the casein and whey groups. It should be noted that the dietary habits of these police officers were pretty bad before this study even began. Many weren't eating enough protein, and most were bingeing on carbs late in the day having not had the time to eat earlier in the day. Just by improving their baseline diet probably had an impact on their muscle mass gains. Still, this brings up the "Fast vs. Slow Protein" study that has gotten so much attention recently (2). You can read a bit more about this study at Mesomorphosis (http://www.mesomorphosis.com/exclusive/mcdonald/protein01.htm). Obviously, whey and casein, although both milk proteins, behave differently and have different physiological effects. There is a lot to discuss about these recent findings. Further research is needed to explain just what peptides in casein are responsible for the

anticatabolic effect, or, as Boirie et al demonstrated, whether it is simply a matter of absorption rates. Not only that, but what effect do other nutrients like carbs and fat have on these two protein supplements during a diet? There's more to come I'm sure…

References:

1. Robert H. Demling, Leslie DeSanti. Effect of a Hypocaloric Diet, Increased Protein Intake and Resistance Training on Lean Mass Gains and Fat Mass Loss in Overweight Police Officers. Annals of Nutrition & Metabolism 44:1:2000, 21-29.

2. Boirie Y, Dangin M, Gachon P, Vasson MP, Maubois JL, Beaufrere B Slow and fast dietary proteins differently modulate postprandial protein accretion. Proc Natl Acad Sci 1997 Dec 23;94(26):14930-5

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Meal Replacement Powders (MRP's) Revealed

By Rehan Jalali
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Don't worry, this is not one of those articles that tells you what's wrong with meal replacement powders on the market and then tries to sell you one because it has "better" ingredients than the others. This article is about MRP ingredients and what the benefits are of using them.

Most of us know that quality nutrition and supplementation is the key to achieving athletic and physique success. It is important to eat 5-7 small meals daily to increase nutrient absorption, enhance metabolic rate, and help stabilize blood sugar (and insulin) levels. MRP's allow you to get all your meals in a convenient and generally tasty manner (I sure don't have the time to cook 6 meals daily!). They help improve overall nutrition and give you key nutrients your body needs to improve health and physical performance. However, whole foods should also be part of the diet as they provide fiber (usually low in MRP's) and phytochemicals (plant chemicals from vegetables). Plus it can be theorized that going a period of time without whole foods and relying solely on MRP's can decrease digestive enzyme activity in the lumen. MRP's usually contain protein, carbohydrates, fat, and vitamins and minerals.

MRP's usually start out with a "proprietary protein blend" with some cool and marketable name such as metamyobiocellaten. MRP's have been in a "protein race" for some time. First there was 37 grams of protein per serving, then 42, then 45, now 50--what next? The more is better philosophy may be counterproductive here as excess protein is excreted out of the body and may be stored as fat (although unlikely). Some MRP's may have only one protein source such as whey protein isolate but it is preferred to get a protein blend to utilize all the functional benefits of different proteins. Quality whey protein has benefits including providing intact immunoglobulins to support immune function, providing the highest concentration of BCAA's (branched chain amino acids leucine, isoleucine, and valine which play a key role in the muscle building process-about 25%), it has a high BV (biological value) which means it is readily absorbed and utilized by human muscle tissue, it may even support IGF-1 levels, and it dissolves well in liquid. Casein is another milk protein that seems to have a timed release effect as it forms a gel

in the gut to slow the transit time of amino acids which may enhance absorption. It has a very high natural glutamine content and most of this glutamine is found in the peptide form for better absorption (due to peptide transport systems in the digestive tract). In a recent study published in the Annals of Nutrition and Metabolism, whey protein was compared with a casein protein hydrolysate (which contains about 20 % glutamine peptides) and a hypocaloric diet with regards to lean muscle mass, strength, and body fat. The results of this study showed that the casein protein hydrolysate group lost more body fat, gained more lean muscle mass, and had greater strength increases. The authors of the study stated that "this significant difference in body composition and strength is likely due to improved nitrogen retention and overall anticatabolic effects caused by the peptide components of the casein hydrolysate". Casein also has a high tyrosine to tryptophan ratio so it could be considered a stimulating protein as well. Milk protein isolate contains both whey and casein and it is a decent source for these two proteins. Soy protein isolate has been shown to enhance thyroid hormone output, which can increase metabolic rate to support fat loss. The isoflavones in soy have shown to have numerous health benefits including cholesterol and triglyceride lowering effects. It contains an excellent ratio of glutamine, arginine, and the BCAA's. It is a fairly low priced protein source but can have positive benefits for women mainly but men as well. Egg albumin protein is the "regular old Joe" protein. It boasts a great amino acid profile but does not offer very many functional benefits. It is a little harder to mix in liquid. Most MRP's or at least the proteins in them are "agglomerated" which means they go through a process (we will get into the details of this in the future) which makes them easier to mix in liquid.

MRPS' contain carbohydrates as well. Typically the main source is maltodextrin which is a very low cost ingredient derived from corn. Although it is considered a complex carbohydrate and a glucose polymer, it has a very high glycemic index rating (this is a rating which determines how your blood sugar and hence insulin responds after ingesting carbohydrates). In fact, maltodextrin's rating on the glycemic scale is right up there with maltose which is glucose+glucose. That means it can cause a large insulin response which would be beneficial after a weight training workout but not beneficial other times of the day. Corn syrup solids is another ingredient you'll see on MRP labels. It is also derived from the enzyme hydrolysis of corn. Fructose is fruit sugar and is added to MRP's not only to provide a source of carbohydrates but also to sweeten the product as it has a very sweet taste. It is mainly metabolized in the liver. Brown rice syrup and brown rice complex also are added to provide a good source of carbohydrates from brown rice. FOS (fructooligosaccharides) are derived from Inulin and are naturally found in jerusalem artichokes. They can enhance the digestive tract and also sweeten the product. Some MRP's are also fortified with dietary fiber (this is actually a problem with many MRP's--they do not have a lot of fiber in them). During the last 20 years, research has implicated dietary fiber as important in various aspects of gastrointestinal function and in the prevention of disease states. Dietary fiber is defined as “plant polysaccharides and lignin which are resistant to hydrolysis by the digestive enzymes in man.” Examples include cellulose, hemicellulose, pectin, lignin, gums, carrageenan, and mucilages. Insoluble fibers include lignin, cellulose, and some hemicellulose. Soluble fibers include pectin, gum, mucilages and some hemicellulose. Cold guar gum has also been used for weight reduction. Effects of fiber include increased fecal bulk, decreased luminal

pressure, preventing colon cancer, delayed gastric emptying, reduced glucose absorption (lowers glycemic index of foods), and anti-toxic effects. Fiber makes an MRP thicker when mixed in solution.

Essential fatty acids (EFA's) are also added to MRP's. Some of the ones added include borage oil, sunflower oil, flax seeds and flax seed oil, MCT's (medium chain triglycerides which are listed as saturated fats on the label but act differently in the body) and primrose oil. EFA's have many benefits including improved metabolism, improve insulin action, increased growth hormone secretion, improved testosterone production, improved blood pressure, liver support and protection (especially with borage oil and evening primrose oil due to their GLA content), improved condition of hair and nails, improved cholesterol profile, decreased inflammation response, improved nerve function, enhanced immune function, improved energy production of cells, and increased nitrogen retention. A lot of MRP's on the market touting their low or no fat formulas are missing out on the benefits of EFA's.

MRPs' contain a blend of vitamins and minerals to support overall health and many chemical processes in the body. Pre-mixes from companies like Roche are usually added to formulas. Vitamins and minerals are usually ancillary items to MRP's and many minerals in the formulas actually compete for absorption like calcium and magnesium plus they are usually not in the higher absorbable chelated forms. Chromium is added to MRP's, (usually in the better polynicotinate form) to support optimal blood sugar levels and help aid in fat loss. Also, many MRP's are higher in sodium which may cause water retention to occur. It is good to look for an MRP that has at least a 2:1 or better yet 3:1 ratio of potassium to sodium to optimize water balance.

MRP's contain a lot unnecessary ingredients including artificial colors (to make the product look palatable), hydrogentated oils (for 'mouthfeel"), and corn syrup solids and salt (for taste). MRPs' are also sweetened with many different natural and artificial sweeteners including sucralose, acesulfame K, aspartame, stevia, and kiwi extract. Most of these sweeteners are calorie free or such a small amount is used that the calories are insufficient. Sucralose is 600 times sweeter than sugar and is a newcomer to the US market as it was approved by the FDA a few years back. It has been tested in over 100 studies showing safety and efficacy. Aspartame seems to draw controversy as over 50% of the complaints the FDA receives about food ingredients are related to aspartame. It is made up of the amino acids phenylalanine and aspartic acid along with methanol (wood alcohol). There is plenty of safety data behind it but many individuals still seem to be sensitive to this sweetener. Individuals with PKU (a disorder in which the individual cannot metabolize phenylalanine), pregnant women, and nursing women should avoid aspartame.

Meal replacement powders will always be a staple to many people's programs and the future in nutrition advancements holds great promise to this meal in a convenient drink mix!

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Be on the Cutting Edge!

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Reader Survey

Tell Us What You Think?

1. *Going on a Diet? The Protein Supplement You Choose Might Make a Big Difference by Bryan Haycock*

[ ] It was good.
[ ] It was okay.
[ ] I didn't like it.
[ ] I'm not interested.

2. Meal Replacement Powders (MRPs) Revealed by Rehan Jalali

[ ] It was good.
[ ] It was okay.
[ ] I didn't like it.
[ ] I'm not interested.

3. *What type of articles would you like to see in the future? (Check all that apply.)*

[ ] Anabolic Steroids and Pharmaceuticals
[ ] Anti-aging medicine
[ ] Body Transformation
[ ] Children's Health and Nutrition
[ ] Competitive Bodybuilding
[ ] Diet and Nutrition Reviews
[ ] Dietary Supplements
[ ] Exercise Physiology
[ ] Fitness Competitions
[ ] Fitness Psychology
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[ ] Lifestyle Management
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We hope you have enjoyed the latest issue of the Think Muscle Newsletter. Suggestions? Comments? Questions? We'd love to hear them!

Best regards,

The Think Muscle Editorial Staff
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