

***MAGIC MUSCLE PILLS!!***  
***HEALTH AND FITNESS QUACKERY***  
***IN NUTRITION SUPPLEMENTS***

A report by the  
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## ***I. SUMMARY***

Every year, about one hundred companies sell at least \$100 million worth<sup>1</sup> of expensive and virtually useless food supplements -- pills, powdered mixes and liquids -- to dieters and athletes, especially body builders. While these so-called "nutritional supplements" come with scientific sounding names, aggressive sales pitches, and ambitious claims, virtually none of the products deliver what they promise -- typically, to "add muscle," "burn fat" or "convert unwanted fat into energy" -- and the jury is still out on whether some might be harmful, even when used according to package directions. The products do tend to be expensive: one company recommends a supplement regimen that costs \$77 a week.

Since most advertisements in the popular body-building magazines are for these basically worthless products, the recent rapid growth in muscle magazines is built in large part on deceptive advertising. Indeed, several of the most popular body-building magazines are published by supplements manufacturers and exist mainly to promote their nutritional supplements.

The "nutritional" supplements industry is growing due to increasing concern about the safety of anabolic steroids. Many supplements are now being promoted as safe and natural substitutes for steroids, with similar effect on musculature. But they have no effect on musculature; also, the "scientific studies" cited in advertisements to "prove" effectiveness are rarely double-blind<sup>2</sup> and are not published in reputable professional journals for peer review. Sometimes the manufacturers' claims do have some scientific basis, but the product claims stretch scientific principles cited to the point of absurdity. Dr. Stephen Barrett, a scientific and editorial consultant to the American Council on Science and Health, has written, "Fitness and body

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<sup>1</sup> Source of estimate of number of companies is Stephen Barrett, M.D. a scientific and editorial consultant to the American Council on Science and Health, in their 1991 publication, **Quackery By Mail**. Sales figures were provided by Dr. Barrett in a telephone conversation. Other estimates put the number as high as \$500 million.

<sup>2</sup> A double blind study is when neither the professional administering, nor the patient receiving, know whether the substance is the product being tested or the placebo. Only in this way can researcher bias and the placebo effect be eliminated. This method ensures there will be no preconceived expectations that might affect the outcome of the study.

building magazines are loaded with ads for 'ergogenic aids' -- supplement concoctions that contain vitamins, minerals, amino acids and/or various other substances...All such products are fakes."<sup>3</sup>

To begin curbing the deception and exploitation of susceptible individuals, the Department of Consumer Affairs is issuing "Notices of Violation" of the New York City Consumer Protection law, for deceptive advertising, against the following:

- *Advanced Cell Growth Formula*. Opti-Genetics. An advertisement makes the startling claim: "A NEW! Advanced Cell Growth Formula That Stimulates Muscle Growth Even While You Sleep!!!" As if this didn't get the point across, a body builder is shown at night in bed, with his well-developed chest exposed and the product displayed on his night stand. No nutritional supplement has been shown to stimulate muscle growth, on either an awake or a sleeping body.
- *Hot Sauce*; Universal Nutritional Systems. An "Anabolic Inferno," the ad trumpets. Hot Sauce is "the most efficient muscle building supplement" which will allow a user to "watch...muscles explode with incredible strength, massive size and pure energy." Amazing, but untrue.
- *Metabolol*; Champion Nutrition. "Nothing is more powerful at adding muscle without fat." No pill, powder or drink can add muscle.
- *Meg-Amino 1500*; Mega-Pro International. The maker claims Mega-Amino "is the most powerful muscle-building amino acid." Not only isn't it "the most powerful," it doesn't build muscles at all.
- *Cyberblast, Cybertrim, Cybergain, Vortex*; L & S Research Corp. Among the spurious claims are: "speed[s] up the metabolization [sic] of body fat," and causes "depletion of body fat."
- *Ultra Pro*; ROM Research. One can "pack on the muscle" and produce "HUGE Gains in record time." Nonsense.

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<sup>3</sup> Dr. Stephen Barrett, *op. cit.*, p. 3. In 1984, Dr. Barrett received the FDA Commissioner's Special Citation Award for Public Service for fighting nutrition quackery.

Some of the products raise serious safety concerns. For example, an excess of growth hormone (GH) can cause acromegaly, in which the muscles do grow yet are weaker and lose some of their functionality. Smilax, also found in supplements, acts as a diuretic that can actually impair athletic performance. The effect on the body of the single amino acids contained in many nutritional supplements is still not fully understood and their use in special supplements should be avoided altogether. In fact, the American Council on Science and Health recommends, "Unless you are participating in a scientific study conducted by reputable researchers, *you should not take amino acid supplements since they have not been proven safe*"<sup>4</sup> [their emphasis]. Dr. Vincent Herbert, in **The Mount Sinai School of Medicine Complete Book of Nutrition**, states emphatically, "The regular consumption of amino-acid supplements is another potentially dangerous fad that is often promoted in health-food stores as well as in fitness and body-building magazines. There is no need for these products and claims for them are deceptive and misleading."<sup>5</sup>

The potential dangers were tragically illustrated in 1989-90, when approximately 30 people died from one of the amino-acid supplements, L-Tryptophan. Although investigators now believe that a contaminated batch may have been the direct cause, closer federal oversight might have caught it.

What's been stopping the Food and Drug Administration from curbing these products? For one, the agency has been hiding behind a 1976 amendment<sup>6</sup> to the Food, Drug and Cosmetic Act, sponsored by former Senator and vitamin enthusiast William Proxmire, that was passed to prevent the FDA from limiting the potency of a vitamin or mineral supplement based on the ground that the supplement is a drug if it exceeds the level of potency that the agency considers rational or useful.<sup>7</sup>

But an internal FDA 1989 memorandum we obtained, written by the agency's Chief Counsel,

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<sup>4</sup> "Diet and Behavior," a Report by the American Council on Science and Health, July 1988.

<sup>5</sup> Victor Herbert, M.D., J.D., Genells J. Subak-Sharpe, M.S. editors, **The Mount Sinai School of Medicine Complete Book of Nutrition**, p. 43, 1990, Mount Sinai School of Medicine, New York.

<sup>6</sup> 21 U.S.C.A. Sec. 350.

<sup>7</sup> In the mid-1970's, the FDA proposed to classify high potency Vitamin A and D preparations as drugs. The agency had argued that these potencies were far higher than any possible food nutritional value and therefore were being used for therapeutic (drug) reasons. Vitamin enthusiasts wrote Congress hundreds of thousands of protest letters.

concluded that the Proxmire memo "does not" affect the way the agency regulates the amino acid L-tryptophan, which was being used as a food supplement. The Proxmire amendment spoke only to the issue of potency; the agency was still free to require proof of drug-like claims, such as "increases metabolism" and "increases muscle mass," or to hold that a product is a "food additive" that would have to be proven safe to be allowed on the market. John Taylor, the FDA Associate Commissioner for Regulatory Affairs, who resigned in 1989 after 30 years with the agency, admitted to us, "We didn't really go after them [sports nutrition supplement manufacturers] the way we should have."

Still, Gary Dykstra, the FDA's Associate Commissioner for Regulatory Affairs, explained, "The [Proxmire] amendment slowed us down, especially because of the swiftness with which it got through Congress and was signed by the President. It was a loud and clear message that we should tread lightly in this entire field... that this issue is able to generate mountains of mail and a lot of interest on Capitol Hill."

Fortunately, the FDA under Dr. David Kessler is finally looking into this area; an FDA Dietary Supplement Task Force has completed an as yet unpublished nine-month study of nutritional supplements. Reportedly, among the study's recommendations is that the FDA declare amino acid supplements to be drugs, meaning their manufacturers would have to prove they are safe and effective for the benefits claimed, just like any drug. Many of these products would have to be taken off the market. This report now sits on Dr. Kessler's desk. We urge him to approve it. Associate Commissioner Dykstra cautioned us, however, that Dr. Kessler will have to "get the approval of his bosses" before he can sign the report, and a regulation implementing the report's recommendations would also be required. President Bush's recent announcement of an extension of his regulatory moratorium, not to mention Vice-President Quayle's Council on Competitiveness, present major roadblocks to FDA action. As with so many areas of health-safety regulation, the Bush Administration may force science to take a back seat to politics.

Meanwhile, the Federal Trade Commission is supposed to be monitoring the advertising of these products. Yet the last time the FTC took action against them was in 1985, when it proceeded against Weider Health and Fitness for two products claiming to create muscle. Weider had to pay back \$400,000 to people who had bought the products. But the FTC hasn't taken action against the many other manufacturers of these products, ignoring for many years

preposterous claims like "increases lean muscle mass" for substances like inositol, chromium picolinate, and sterols. The FTC's Susan Cohen, Program Manager for Drug Advertising, told us, "Our resource allocation is not enough," and added, "I'm sure they [sports nutrition supplements] are all fraudulent but we don't have the time or money to go after all of them. Our policy is to pick the ones that are the largest and most offensive." (Remember, this is a \$100 million to \$500 million industry.) She did say that the FTC is now "conducting some investigations" of these products.

The body-building magazine industry is supported in large part by nutritional supplement advertising. A study by Dr. Steven Barrett, for the American Council on Health and Science, found that 64% of all health and fitness magazines advertise products of dubious efficacy and safety. Our own review of a sampling of recent issues of four popular body-building magazines found that 56% of the full-page ads were for worthless and possibly even harmful nutritional supplements.

Some bodybuilders may actually believe that these supplements are helping them. But a study with weight lifters found that the placebo effect can drive athletes to train harder and faster; the gains in strength and endurance were real, but a sugar pill would have done the same.

While the U.S. Government has sat on the sidelines, these products have continued to be hyped to a gullible population. Undersize teenage boys dreaming of transforming themselves into another Arnold Schwarzenegger continue to be taken in by ads promising a short cut to a muscle-man body.

## ***II. A SAMPLER OF FOOD SUPPLEMENT HYPES***

There are so many questionable nutritional supplement products that can be purchased through the mail or on vitamin store shelves that we present here only a small sampling of what's available.

### **Aktiva International - Fat Burners, \$19.95/30 day supply**

A mail solicitation for the product claimed that it "contains 100% natural ingredients" which will "convert unwanted fat into energy." 100% nonsense. In fact, the pills contain amino acids which do not "burn fat," as the ad claims.

**Champion Nutrition - Metabolol, \$14.29/1 lb. can**

An advertisement in several widely circulated fitness magazines claims that "training with Metabolol helps target calories toward muscle growth and recuperation instead of fat." Metabolol actually contains amino acids that have no ability to "add muscle without fat." According to nutritionists we interviewed, there is no way to "target calories" in the human body. The company sent Consumer Affairs an unpublished research document to support its claims, but the researcher was unreachable to verify his results.

**Genesis Nutrition - Super Fat Burners, \$16.95/11-day supply**

These supplements were found at a local health food store. The company claims that they facilitate weight loss, aid in the metabolism of fats, and reduce blood cholesterol levels. The pills contain choline, inositol and certain free-form amino acids -- useless for burning fat and reducing cholesterol.

**TwinLab - Amino Fuel 2000, \$19.99/100 tablets**

This product is sold both by mail-order and in nutrition stores. Advertisements claim it is "unequaled for building muscle tissue and increasing lean body mass." The pills are little more than glorified multi-vitamin tablets and some amino acids. Egg whites can provide this protein at less than a tenth of the cost.

**Mother Nature's Products - Trim Away 4000, \$17.95/quantity unspecified**

This diet pill is advertised in tabloid magazines, such as the *Weekly World News*. Ads claim that "they burn fat and eliminate excess water weight." It contains an appetite suppressant that causes the user to eat less and thus lose body fat. But it does not "burn fat." When questioned over the phone, company representatives themselves denied this claim for "Trim Away," but referred us to one of their other products which "really does burn fat."

**Parrillo Performance Products - Cap-Tri, \$40/32 oz.**

Magazine ads for this liquid supplement claim that it "helps your body increase energy levels, extend endurance, build muscularity, enhance metabolism, and burn body fat." The sole ingredient is "fractionated coconut oil." No evidence can be found to substantiate these claims. Coconut oil is high in saturated fat and can, in fact, lead to heart disease. When a representative was asked how Cap Tri works, we were told that. "The thermogenic effect of fractionated coconut oil heats up to burn fat." When the company was called back a few days later to explain how they could promote a "Fat Burning" product, a representative told us, "We have



not made that claim in quite some time."

**U.S. Nutrition - Fat Metabolizer Diet Pills, \$10.99/60 pills**

This supplement is found in health food stores and claims to "metabolize fat 100% naturally." The tablets are actually a combination of individual amino acids and natural extracts of fruits, vegetables and herbs that do not contribute to fat metabolism. When we asked the company if an ingredients list was available, we were told, "Well, some of it [their ingredient list] tells you what's in it, but not all of it."

**Weider Food Supplements - Dynamic Fat Burners, \$17.99/80 pills**

Weider is one of the largest suppliers of body building products. These "fat burners" contain five chemicals and vitamin B-6 of no special bodybuilding value. Company officials refused to discuss the products with us over the phone. When asked what information was available on the product, particularly about health and safety concerns, we were told that no information was available except the product label.

**Weider Food Supplements - Dynamic Life Essence, \$24.99/150 caps.**

According to an advertisement, this product provides "a mixture of pure L-form free aminos, the building blocks of protein." As explained later, free-form amino acids are not advised for building protein and may be harmful when not taken in proper proportions. Whole protein from egg whites costing 95% less is just as effective, if one really wants more protein.

A Weider product called Dynamic Life Essence, along with the Anabolic Mega-Pak, were the subjects of a rare FTC enforcement action in 1985. Among the claims the FTC found to be *untrue* were: the products will achieve greater muscular development over a course of a few months of a weight training program than a non-user of these products; the products will produce results equivalent to those results bodybuilders generally believe are achievable through the use of anabolic steroids; they will stimulate greater than normal production or release of human growth hormone; the "Mega-Pak" was developed by a team of the world's most renowned nutritional biochemists, exercise physiologists and trainers.

**Male-Pak - Slim-Tone, \$9/60 capsules**

Slim-Tone claims "to help burn fat and control muscle tone." The capsules contain three amino acids that play no part in fat metabolism. Two of them, lysine and arginine, are antagonistic to each other in improper proportions, contributing to an even greater amino acid

imbalance.

**Metabolic Nutrition - Opti-Genetics, \$27.98/2.2 lb. can**

The advertisement for this powdered mix claims it will both "stimulate muscle growth even while you sleep," and "maximize your genetics to rapidly synthesize protein into more muscle mass." Genetics cannot be changed or enhanced, as this ad implies.

**M-L-O Products - Hard Body Gainer 3600, price not disclosed.**

The advertisement reads, in part, "Pure muscle. That's what you get with Hard Body Gainer 3600...It's 95% fat free and contains the Anabolic Formula you need to gain phenomenal muscle mass." Pure hype.

**Next Nutrition, Inc. - ProOptibol, no price in ad.**

The ad claims: "New Improved ProOptibol converts the published findings of the best sports science brains in the world into a scientific formula that accelerates lean muscle growth. Current research shows that progressive muscle growth requires much more than just reps, sets and cycles. Muscle growth also requires an optimized metabolism including enhanced insulin for switching into Anabolic Drive."

Lowenthal and Karni, writing in **The Mount Sinai School of Medicine Complete Book of Nutrition**, disagree: "The addition of muscle mass can be accomplished only through regular muscle work (weight training or similar conditioning) coupled with a caloric increase."<sup>8</sup> The extra calories, they advise, should be obtained solely from food.

### ***III. BACKGROUND: "FAT-BURNING" AND MUSCLE DEVELOPMENT***

The human body, as any machine, requires energy to function properly. This energy is derived from the calories taken in as food. The body burns the calories and releases the energy necessary for all bodily functions. The body burns calories even while at rest. In fact, the average person burns 71 calories an hour just by sleeping.<sup>9</sup> The body's system for burning

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<sup>8</sup> David T. Lowenthal, M.D., Ph.D., and Yani Karni, B.Sc., "The Nutritional Needs of Athletes," **Mount Sinai Medical School Complete Book of Nutrition**, Herbert and Subak-Sharpe, eds., p.408.

<sup>9</sup> Sylvia S. Mader, **Human Biology**, William C. Brown; 1990. p. 93.

calories and putting the energy to work is the "metabolism."

Certain basic functions are essential to life and require constant energy. These include breathing, blood circulation and maintenance of body temperature. The rate at which the body burns calories for these functions is called the Basal Metabolic Rate (BMR). A person's BMR indicates the minimum number of calories required for this person to maintain basic life functions. Voluntary activities such as thinking, reading or exercise require additional calories beyond the BMR.

Foods that are ideal sources of calories are generally rich in starches and complex carbohydrates, such as cereals, pasta and bread. Most Americans, however, have diets that include many simple carbohydrates which are also rich in fat. These are "sugary" foods like candy and ice cream. Some of the most commonly eaten protein sources are also fatty, such as beef, eggs and dairy products -- although protein can also be obtained from grains, beans and other sources. A certain amount of fat is essential for the body as both energy storage and absorption sites for the fat-soluble vitamins A, D, E and K. The amount of fat in the body determines the amounts and rates at which these vitamins will be absorbed.

Fat can be broken down, or metabolized, by the body for its caloric content and burned as energy. Excess fat in the diet will be stored around the muscles where it can be accessed for energy when necessary.<sup>10</sup> This is the fat that dieters try to eliminate through low-calorie diets and regular exercise programs.

According to numerous nutritionists we interviewed, and others whose scientific writings we have reviewed, no known chemical can burn fat or facilitate its metabolism. The only real method of burning fat is exercise. Products that claim to burn fat in combination with an exercise program are intentionally deceptive because it is the exercise that rids the body of the fat. The numerous ingredients they contain are ineffectual in fat metabolism and some of them could possibly be harmful.<sup>11</sup>

The only realistic method of reducing fat and body weight was summarized by former U.S. Surgeon General, Dr. C. Everett Koop: "Achieve and maintain a desirable body weight. To do

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<sup>10</sup> Robert B. Layzer, M.D., "How Muscles Use Fuel," *New England Journal of Medicine*, 2/7/91, p.411.

<sup>11</sup> Erica Frank, M.D., "Diet-in-a-pill, " *Vogue*, 4/89 p.30.

so, choose a dietary pattern in which energy (caloric) intake is consistent with energy expenditure. To reduce energy intake, limit consumption of foods high in calories, fats, and sugars and minimize alcohol consumption. Increase energy expenditure through regular and sustained physical activity."<sup>12</sup>

How do muscles use energy to perform and grow? They need certain proteins to enable them to function properly. Proteins are large molecular structures that are composed of smaller units called amino acids. There are about twenty different amino acids, and their concentrations within the proteins determine the nature of the protein. Since muscles require only certain types of proteins (actin and myosin), the amino acids must be in the proper quantities to build those proteins.<sup>13</sup> Too much or too little of a particular amino acid does no good and could even be harmful.

Most of the amino acids needed by the body are created within the body. There are, however, nine amino acids that cannot be produced by the body and must be obtained from an outside food protein source. These are known as "essential amino acids." In order to ensure receiving all the essential amino acids in the proper quantities, it is important to eat a well balanced diet with a good protein source, as recommended in the new USDA-recommended foods "pyramid."<sup>14</sup>

According to Dr. Richard Wurtman, an amino acid specialist at the Massachusetts Institute of Technology, amino acids are of no value when taken individually; only whole proteins help to build muscle. When an individual exercises, muscles will grow if there are a sufficient numbers of the proper proteins to build muscle. Bodybuilders and weight lifters have to be sure to eat the proper proteins along with large amounts of complex carbohydrates to ensure both an energy source and further muscle development. Dr. Wurtman recommends egg albumin as a good source of protein without too much cholesterol. This provides all the necessary amino acids for muscle-building, including the so-called Branched-Chain Amino Acids (BCAA), leucine, isoleucine and valine.<sup>15</sup> While research has shown that exercise consumes large

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<sup>12</sup> *The Surgeon General's Report on Nutrition and Health*, U.S. Department of Health and Human Services Publications, 1988 p.11

<sup>13</sup> Mader, *op cit.* p.20

<sup>14</sup> Mader, *op. cit.* p. 83-84.

<sup>15</sup> Richard Wurtman, PhD, Massachusetts Institute of Technology. Telephone conversation, 6/24/91

amounts of BCAA, Dr. Joanne Slavin, Greg Lanners and Dr. Mark Engstrom of the University of Minnesota at St. Paul indicate that bodybuilders need not seek out BCAA supplements because "there is no evidence that endurance athletes need significantly more branched-chain amino acids in their diets than do sedentary people."<sup>16</sup>

In sum, the only way to build muscles is to exercise. Delia Hammack, Director of Nutrition at the *Good Housekeeping Magazine* Diet and Fitness Center, writes in **The Mount Sinai School of Medicine Complete Book of Nutrition**, "A little extra protein is also required [in addition to exercise] to supply the amino-acid building blocks for new lean tissue, but if additional calories come from a variety of foods, abundant protein will also be present. A high-protein diet or protein supplements offer no advantages and are not recommended."<sup>17</sup>

#### **IV. THE INGREDIENTS: WHAT THEY DO AND DON'T DO**

In conducting its investigation, Consumer Affairs surveyed numerous fitness magazines, and analyzed mail solicitations over a three-month period. The Department's investigators discovered a flood of unsubstantiated, misleading and potentially dangerous claims.

Very little of the "research" cited in supplements advertising is truly scientific. Rarely does any of it appear in reputable scientific journals. And the performance improvement some athletes perceive is really just a placebo effect. As David Lightsey writes,<sup>18</sup> "Just expectation is enough to produce the placebo effect. It's easy to dupe someone in high school or college...The placebo effect is very high in athletes and it often coincides with natural improvement...Another difficult problem is the plateau most athletes reach upon the peak of athletic conditioning...The placebo effect has proved effective in overcoming this plateau. If the athlete really believes what he is taking is going to help him, even if it is sugar, it can have a

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<sup>16</sup> Joanne L. Slavin, MD, et. al., "Amino Acid Supplements: Beneficial or Risky?" *The Physician and Sports Medicine*, March 1988, p.219

<sup>17</sup> Delia A. Hammack, M.S., R.D., "Protein," **The Mount Sinai School of Medicine Complete Book of Nutrition**, Herbert and Subak-Sharpe, eds., p. 44.

<sup>18</sup> David Lightsey, M.S., is the Coordinator of the National Council Against Health Frauds Task Force on Ergogenic Aids. NCAHF is comprised of health professionals, educators, researchers, attorneys and concerned citizens. Their main office is on the campus of Loma Linda University in Loma Linda CA.

dramatic effect."<sup>19</sup>

Following is a partial survey of ingredients that are typically found in these products.

- *Choline*. This is a chemical that is included in many of the "fat burning" formulas. It is manufactured naturally in the body in more than sufficient quantity. There is no U.S. RDA (Recommended Daily Allowance) value for choline because it need not be present, and certainly should not be supplemented, in the diet.<sup>20</sup> Among products we reviewed that contain choline are Beverly International Growth Accelerator, and "Razor Cuts," a proven fat fighter by National Health Products.

- *Inositol (inosine)*. Along with choline, inositol is frequently found in fat burning supplements. There is also no RDA value for this water-soluble compound because there is no evidence that it has any use whatsoever in the human body. It certainly has no fat burning qualities. Recent data indicates that inosine may in fact impair performance among athletes.

Dr. Herbert, in **The Mount Sinai School of Medicine Complete Book of Nutrition**, calls inositol, choline and several other substances "pseudo-vitamins." He writes, "The use of the term *vitamin* to describe these substances has been described as health fraud, because it implies the substances have a specific role in maintaining health, but there is no scientific basis for these claims. Still, the substances are widely promoted and are sold in many health-food stores."<sup>14</sup>

- *Potassium*. Potassium is a macromineral, meaning that it is recommended for the body in amounts of at least 100 mg. per day. It is especially useful for nerve conduction and muscle contraction. It also takes part in certain metabolic reactions. Most people, however, get enough potassium from regular diet sources such as meat, potatoes, bananas and nuts.<sup>15</sup>

- *Chromium Picolinate*. This chemical has been a subject of much debate lately. A recent

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<sup>19</sup> Lightsey and Attaway, "Deceptive Tactics Used in Marketing Purported Ergogenic Aids," National Council Against Health Care Frauds.

<sup>20</sup> Michelle Vivas, nutritionist. Telephone conversation, 6/20/91.

<sup>14</sup> Herbert and Subak-Sharpe, eds., *op. cit.*, p. 92.

<sup>15</sup> Mader, *op. cit.* p.91.

study by a researcher at Bemidji State University in Minnesota has shown that this substance is an efficient provider of chromium. Chromium is essential for the proper metabolism of insulin and muscle growth. It is often deficient in the average diet; its best natural source is brewer's yeast.<sup>16</sup> If further testing substantiates these initial findings, chromium picolinate could become the first true anabolic aid. One should be careful, though, not to confuse it with similar-sounding *chromium polynicotinate* which has been proven ineffective as a chromium provider.<sup>17</sup> And, of course, the jury is still out on chromium picolinate as well. However, the National Coalition Against Health Fraud (NCAHF), states, "However, until more research is conducted, chromium picolinate's advertising claims as an anabolic agent is unsubstantiated due to the lack of peer review and substantiation of Dr. Evan's [performed one study] research. Additionally, chromium picolonate's mechanism of action claims are pure speculation."<sup>18</sup>

"Roid Replacer," which contains chromium picolinate, is made by Conac Corporation and is billed as "the ultimate non-steroidal anabolic formula" that "out-performs anything legal."

- *Growth Hormone.* Growth hormone (GH) is the hormone responsible mainly for growth of bones and muscles in adolescents. In recent years, this hormone has been synthesized and it has become more available. It is believed that by stimulating GH production in the adult body, or by taking GH supplements, the body will increase muscle size in adolescence. This is completely incorrect, as an excess of GH in adults causes a condition called acromegaly in which the muscles of the body do grow, yet they are weaker and lose some of their functionality. Acromegaly is also indicated by an unusual growth of the fingers, toes and jawbones, lending a grotesque appearance. One of the products we reviewed that contains GH is Genesis Nutrition's "Growth Hormone."

- *Smilax.* This extract of the Mexican sarsaparilla root is found in many of the products that claim to help build strength. It is supposed to boost testosterone levels and improve performance. Of course, there is no evidence whatsoever to support these claims. There is evidence, however, that smilax does contain saponins which are natural chemicals that have diuretic, diaphoretic and laxative abilities. These cause the individual to experience an increase in urination, perspiration and bowel movements respectively. This could be quite dangerous to

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<sup>16</sup> "An Alternative to Anabolic Steroids," *American Druggist*, 7/89 p.61

<sup>17</sup> Michael Colgan, Ph.D., "Chromium: Hot Metal for Health," *Muscular Development*, 8/91 p.18

<sup>18</sup> 1991 Report of the Task Force on Ergogenic Aids, chaired by Dr. William Jarvis.

the athlete who would experience dehydration, vasoconstriction and diarrhea. The decreased blood flow to working muscles would also elevate heart rates and decrease performance overall.

Weider Smilax/Ginseng Capsules are described as an "optimum nutrition anabolic activator." But according to Dr. Varro Tyler in the March 1988 issue of Nutrition Forum, Smilax does not have any proven anabolic activity. And the NCAHF states, "As with all other products mentioned in this article, not one of these firms could produce any double blind research studies to support their claims. As is typical with most ergogenic aid companies, they rely on testimonials and feedback."

- *Di-Benzoide*. This compound is supposed to help with muscle repair and recuperation. It also is touted as an effective steroid alternative. There is no evidence for this. An ad for Gold Power's "The Power Pill," which contains this substance, urges readers to "Get the Pill and get huge."
- *Sterols*. Vegetable sterols are marketed as replacements for animal steroids to achieve the same increases in muscle growth. Male Pak's "Gamma Oryzanol" claims its sterols will produce "natural gains equal to synthetic steroids."
- *Ginseng*. Ginseng is an herb that has been assumed since ancient times to have innumerable properties. Many supplements manufacturers apparently believe that since no one has ever found a definite use for it, they can market it as having any one of a numbers of purposes. It is commonly sold now as a product that will increase both stamina and concentration, promote faster recovery and decrease fatigue. What they don't say is that large doses of the natural stimulants found in ginseng can cause hypertension, insomnia, depression and skin blemishes.

Lowenthal and Karni write in **The Mount Sinai School of Medicine Complete Book of Nutrition**, under the heading "Ginseng, Bee Pollen, and Other Fads:" "There is no sound data demonstrating that any of these preparations can improve performance, however."<sup>19</sup>

This hasn't stopped the makers of Ginsana Concentrated Herbal Extract from claiming, "Fifteen years of scientific research" found "improved oxygen uptake, generally improved cardiovascular performance and greater ability to concentrate."

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<sup>19</sup> David Lowenthal, M.D. and Yair Karni, B.Sc., "The Nutritional Needs of Athletes," **The Mount Sinai School of Medicine Complete Book of Nutrition**, Herbert and Subak-Sharpe, eds., 1990, p. 412.



● *Triglycerides*. Parillo Performance claims in one of its ads, "One of our most beneficial supplements is Cap Tri (medium chain triglycerides present in fractionated coconut oil) which helps your body increase energy levels, extend endurance, build muscularity, enhance metabolism and burn body fat." However, Steven Woottan counters in *Nutrition for Sport*: "Consuming triglycerides during exercise has been found not only to be highly unpalatable but also to have no discernable effect on fuel utilization or performance. There is little if any evidence that they improve performance. What evidence there is in the form of very poorly controlled studies using limited numbers of subjects. The vast majority of these substances provide no benefit save that gained by the placebo effect, and the bulk of their promotion relies on endorsement and testimonials by sponsoring celebrities."

● *Amino Acids*. These are the smaller building blocks for proteins. They are listed on packaging as being either in free-form or in proteins. Free-form means that the amino acids contained are either synthetic or have been isolated individually (at great expense) from whole proteins. As mentioned earlier, some amino acids are referred to as "essential." This merely means that the body cannot synthesize them on its own and may get them from any good dietary protein source.

But it doesn't mean that amino supplements are advisable, even for body-builders. According to Dr. Herbert, writing in *Nutrition Today*, "They are not meant to be free-standing, disassociated from intact protein...The average American already eats much more protein than needed, putting a burden on the kidneys to get rid of the nitrogenous waste. Adding still more protein, or amino acid building blocks for protein, puts a still greater unnecessary burden on the kidneys. Since we fill most of our cell protein receptors with amino acids from food every day, the large bulk of amino acid supplements has nowhere to go but out in the urine via the kidneys."<sup>20</sup> In *The Mount Sinai School of Medicine Complete Book of Nutrition*, Delia Hammack wrote, there is "no need for these products [amino acid supplements] and claims for them are deceptive and misleading...Many of these exaggerated claims are misrepresentations of the meaning of research during the last decade that suggested a possible role for amino acids in the treatment of certain disorders."<sup>21</sup> Dr. Douglas Archer of the FDA stated, in testimony before the House Intergovernmental Relations Subcommittee (7/18/91), "People get all the amino

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<sup>20</sup> Victor Herbert, M.D., J.D., "L-Tryptophan: A Medicolegal Case Against Over-the-Counter Marketing of Supplements of Amino Acids," *Nutrition Today*, January/February 1992.

<sup>21</sup> Hammack, *op cit.*, p. 44.

acids they require just by eating an adequate diet." Slavin, Lanners and Engstrom assert, "While it is known that exercise increases branched-chain amino acid oxidation, there is no evidence that endurance athletes need significantly more branched-chain amino acids in their diets than do sedentary people."<sup>22</sup>

It is not known for sure what effects large amounts of even natural single amino acids have on the body. Supplements that do consist of single amino acids should clearly be avoided until there is more knowledge about their safety. Dr. Joanne Slavin cautions that "amino acids taken in large doses are essentially drugs with unknown physiological effects." The American Council on Diet and Health concludes, "These studies [of the possible medical uses of certain single amino acids] may have important medical implications for the future, but they do not mean it is safe to self-medicate with these substances."

Dr. Herbert cautions that there "is strong evidence that eating purified amino acids apart from food promotes osteoporosis." Hammack further cautions that, "When an amino-acid supplement is ingested, it floods the transport carriers with that particular amino acid, which may result in other amino acids not being absorbed in the proper amounts."<sup>23</sup> And Lowenthal and Karni warn, "Taking single amino-acid supplements can interfere with the absorption of other amino acids, upsetting the body's natural balance of these protein building blocks. Furthermore, animal studies have shown that consumption of excessive amounts of some amino acids can have serious side effects."<sup>24</sup>

Listed below are some of the individual amino acids and the rationales for their inclusion in supplements. The acids are listed here in their "L" form, but that prefix may not be present on the product packaging.

- *Branched-Chain Amino Acids*. These are the essential amino acids leucine, isoleucine and valine. BCAA's are included in large quantities in body-building formulas and are also sold as individual supplements. They are consumed heavily by endurance athletes. However, there is no evidence that the body cannot replace them efficiently and needs them to be supplemented. These acids are antagonistic to one another when present in disproportionate

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<sup>22</sup> Slavin, *op. cit.* p.224

<sup>23</sup> Hammack, *op. cit.*, p. 44.

<sup>24</sup> Lowenthal and Karni, *op. cit.*, p. 412.

amounts.<sup>25</sup>

The report of the NCAHF Ergogenic Aids Task Force, discussed how nutritional supplement manufacturers often seize on a modicum of legitimate scientific analysis to make over-broad claims of improved athletic performance: "The rationale behind the branch chain amino acids are the well-established peer reviewed studies which demonstrate leucine as oxidized at higher rates during low intensity prolonged exercise vs. sedentary counterparts. Based on this information, supplement companies extrapolate the data to assume the supplementation of branch chain amino acids will prevent muscle catabolism as a source of it and allow for faster recovery and anabolism between training sessions." But such extrapolation has no real scientific basis. It's just an assumption.

The NCAHF also cites a study that ostensibly proves the effectiveness of branch chain amino acids as a supplement, pointing out that while the study utilizes recuperation testimonials, they do not control for the placebo effect, did not perform any double blind studies, nor publish their data to allow for peer review.

● *L-Tryptophan*. Dr. Victor Herbert, in *Nutrition Today* in January 1992, wrote, "All the L-tryptophan we need from food is supplied by dietary protein, as are all the other amino acids." Dr. Herbert listed several potential harms from taking tablets of this amino acid, including "strong evidence that it promotes osteoporosis," it may "cause urinary loss not only of calcium but also of other minerals," and it can cause excess serotonin in the brain (resulting in drowsiness when undesirable).

L-Tryptophan has a checkered history. Rep. Ted Weiss (D-L, Manhattan), in his opening statement at a hearing last July of his Human Resources and Intergovernmental Relations Subcommittee, on the dangers of L-Tryptophan, said: "As early as 1973, FDA knew there were serious risks associated with L-Tryptophan, including growth retardation and organ degeneration." Although in 1974 the FDA ruled the product no longer GRAS --generally recognized as safe -- "it did little to thwart the growing sales and promotion of L-tryptophan as a dietary supplement." Dr. Esther M. Sternberg of the National Institute of Mental Health told the subcommittee that "prior to 1979 circumstantial evidence suggested an association between the amino acid L-Tryptophan, its naturally occurring chemical products

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<sup>25</sup> Slavin, et al, p.224.

(metabolites) and inflammatory, scarring illnesses."

In 1989, L-Tryptophan was linked to an outbreak of Eosinophilia Myalgia Syndrome (EMS) that caused approximately 30 deaths. According to Dr. Herbert, writing in *Nutrition Today* this January, "it is not known whether the eosinophilia was caused by tryptophan, a contaminant introduced in manufacturing the supplements or both." Still, Rep. Weiss charged, "if the FDA had taken aggressive regulatory action against the widespread illegal marketing of the substance in the 1980's," these lives "would have been saved." Rep. Patsy Mink (D-Hawaii) called the L-Tryptophan deaths an accident waiting to happen and, "most disturbing of all," amino acids remain on the market today in supplement form and are being illegally promoted.<sup>26</sup> Products that contain synthetic L-Tryptophan are now illegal.<sup>27</sup> Weiss' hearing was intended to avoid similar problems with other amino acids.

Products containing free-form amino acids frequently contain synthetic versions of amino acids and should therefore be checked for L-tryptophan.

- *L-Carnitine*. This amino acid first achieved fame in 1982 when the Italian national soccer team attributed its World Cup victory to this "miracle drug." L-Carnitine assists in the transportation of fatty acids across cell membranes when fat is burned for energy. But large quantities of the amino acid have never been shown in reputable studies to be of any additional aid whatsoever. The body has sufficient resources to quickly replace it when used and there is no reason to supplement it.<sup>28</sup>

As the NCAHF Task Force states, "The use of Carnitine to increase use of fatty acid for oxidation and to spare muscle glycogen and therefore increase endurance has been proven ineffective." Vita Life's "Muscle Stuff" pills is one of the L-Carnitine-containing products we reviewed.

- *L-Phenylalanine*. In its synthetic form, phenylalanine is used to make aspartame, an

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<sup>26</sup> As reported in *Food Chemical News*, July 22, 1991, p. 51.

<sup>27</sup> Sandra Whetstone, Food and Drug Administration. Telephone conversation, 7/2/91. Also, "L-Tryptophan Recall Broadened," *FDA Consumer*, 6/90, p.3.

<sup>28</sup> "L-Carnitine: Unproven as an Ergonogenic Aid." *The Physician and Sportsmedicine*, March 1988 p.74-75

artificial sweetener known commonly as NutraSweet. Phenylalanine is a chemical precursor of certain neurotransmitters such as dopamine, adrenaline and noradrenaline. Individuals with the genetic disorder phenylketonuria (PKU) lack the enzyme necessary to break down phenylalanine and are warned to avoid its free-form in their diets. PKU patients risk brain damage if they use products containing this amino acid. Supplement manufacturers should, but rarely do, indicate this on the packaging. Since the presence of phenylalanine is supposed to stimulate the production of neurotransmitters, this is supposed to increase excitatory impulses. This is untrue and phenylalanine has no anabolic effects.<sup>29</sup>

Professor Richard J. Wurtman of MIT, testifying before the Congressional hearing last July, said "As far as I can tell, there is no reason ever for anyone to take this compound. It does not, as implied, increase neurotransmitter synthesis, and its metabolic products can be directly toxic to the brain."<sup>30</sup> Nonetheless, Proto Formula Anabolic Stimulator" is one of the products that contains L-Phenylalanine.

*L-Arginine.* Often marketed along with L-Ornithine as a fat burning supplement, arginine is the only amino acid that has been shown to stimulate growth hormone production in any significant way. However, a 154 lb. man would require a dosage of at least 17.5 grams in order to have any effect. No supplement offers this large a concentration of arginine. Considering the dangers of growth hormone secretion in adults, this is probably just as well. Additionally, there is an antagonism between arginine and lysine in their free-forms.<sup>31</sup>

In addition, Dr. Slavin writes, "When arginine is tested to measure the effect on growth hormone secretion in a clinical setting, it is injected into the subject and not consumed orally, so the effects are maximized."<sup>32</sup>

*L-Ornithine.* This is usually marketed along with L-Arginine as a fat burner. There is no evidence to support ornithine as even an impractical growth hormone stimulator like arginine. It can be found in "Growth Accelerator," made by Beverly International.

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<sup>29</sup> Mader, op cit. p.418.

<sup>30</sup> Wurtman, Professor of Neuroscience and Director of the Clinical Research Center, has written more than 800 scientific papers, half on L-tryptophan and other dietary constituents' effect on the brain.

<sup>31</sup> Slavin, et al, pps. 224, 226.

<sup>32</sup> Slavin, op cit. p. 224.

The FDA does not consider amino acid supplements to be drugs. But testifying last year before the Human Resources and Intergovernmental Relations Subcommittee of the House Committee on Government Operations, Dr. Richard J. Wurtman of the Massachusetts Institute of Technology, called L-Tryptophan "an accident waiting to happen," and added that other amino acids also present health threats. Wurtman urged that amino acids be subject to the same criteria as any drug; they should be shown to be effective and safe and of sufficient purity. Dr. Simon Young of McGill University told the panel how Canada avoided the L-tryptophan tragedy by classifying amino acids as drugs. And Mitch Zeller, of the subcommittee staff, said, "Amino acids should be labeled as drugs because people take them not for any nutritional benefit (for which they are useless and even harmful). Rather, they are taken for their drug-like effects....These companies are hiding behind the claim that their products are nutritional supplements."

According to an account of the subcommittee hearing in *Food Chemical News*,<sup>33</sup> Rep. Patsy Mink of the Human Resources and Intergovernmental Subcommittee "concluded that FDA had simply ignored the problem of amino acids being sold as dietary supplements with drug claims...Most disturbing of all, amino acids remain on the market today in supplement form and are being illegally promoted."

## **V. DECEPTIVE ADVERTISING**

During the course of this investigation, various supplements manufacturers were contacted for information about their products. The typical response from these companies included both a reaffirmation of the claims made in the ad, as well as a promise to send further information. The person contacted was never able to provide more detailed information over the phone. Certain companies did provide some sales information as well as backup literature for their products. But this literature consisted of little more than broad descriptions of the claimed effects of the product and an ingredients list. None were able to furnish published reports from a reputable or peer-reviewed journal.

Consumer Affairs did, however, get a good look at advertising deception. With total sales in the hundreds of millions a year, these companies are turning a handsome profit on largely

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<sup>33</sup> July 22, 1991.

worthless products. Many of these companies are not only doing brisk business in the United States, they also have considerable sales in Canada, Mexico and Europe.

We note that product *labels* do not usually contain the false performance claims we found in *advertisements* for the same supplements. Untruthful labels could get a supplements manufacturer in trouble with the FDA, since only factual and non-misleading information is allowed on food labels. So most companies are careful to put the mistruths in the ads, where they figure they will be ignored by the FTC.

But based on our investigation, however, nearly every firm mentioned in this report engaged in one of several illegal or dubious advertising practices.

By far the most common kind of advertisement is user testimonials, which takes two forms. The first involves the well-known before and after snapshot display. A widely-circulated ad for Cybergenics from L&S Research Corporation showed five different subjects at ten-day intervals during a 60-day training period. Alongside the final photo of each series ran a caption featuring a quote from the subject attesting to the "incredible" results of the product. These ads apparently seem very convincing to many people, yet they are very easily faked.

The second type of testimonial ad features a famous athlete or celebrity who is quoted attesting to the product's effectiveness. Some popular body builders are in such demand for, and appear in, so many of these ads that if one were to take them all seriously it would be impossible to determine which product was actually having an effect. The athletes certainly seem to have no problems determining what's what and are quite eager to provide endorsements. David Lightsey of the National Council Against Health Frauds wrote of one egregious example: "In 1989, a company stated in their promotional material for organic germanium that the New York Yankees were one of the 'health professionals currently using...' their product. The obvious intent was to have the product appear to be endorsed by the New York Yankees. When the Yankee organization became aware of the unauthorized use of its name, it notified the firm with a letter stating the New York Yankees organization does not intend to either directly or indirectly endorse your product, and demanded that the company cease using the Yankees' good name immediately.<sup>34</sup>

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<sup>34</sup> Lightsey and Attaway, *op cit.* p. 5.

Further disproof of the value of testimonials is the "placebo effect." Often, when an athlete is led to believe that a product will help him or her perform, he or she will attribute any gains to that product, despite the fact that the gains are due to his or her own hard work and diligence. In a study with weight lifters, researchers found that those who were convinced they were being given anabolic steroids (they were not) demonstrated much higher motivation than the control group. The placebo group thus experienced greater strength gains because they trained harder. They of course attributed the gains to the steroids they thought they were getting.

Another common deceptive practice is the use of patent numbers to give the false impression that the U.S. Patent Office has approved of the product. The Patent Office is actually not concerned at all with the effectiveness of a product; rather, their only task is to distinguish one product from another. So a patent merely denotes a distinctive difference between one ineffective product's claims and another's. Patent numbers are often falsified anyway due to lack of any verification procedures in advertising.

Some ads make references to studies being conducted and some manufacturers even provide unpublished research to substantiate claims. But none of these are objective double-blind research studies. There is a reason why they are not accepted for publication in reputable peer-reviewed journals.

Many advertisements relied on ambiguity of language and the inability of consumers to understand complex sounding terms. With few exceptions, they made claims like "fat metabolizer," "energy optimizer" and "anabolic activator." Commonly, terms like "sterol" and "anabol" are used in close context with claims like "100% natural" and "derived from nature." This technique bolsters the impression that the products are safe, effective and natural alternatives for anabolic steroids. But sterol is not an appropriate replacement for steroids and "anabol" is a meaningless term.

A few tried to appeal to consumer skepticism by denouncing competitors who made unsubstantiated claims -- while making essentially the same ones. One manufacturer even ran an ad listing the claims they say the FDA has forbidden them to make,<sup>35</sup> implying that the medical establishment is trying to suppress an effective product.

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<sup>35</sup> When contacted, Sandra Whetstone of the FDA Department of Inquiry was unable to substantiate this claim. Ms. Whetstone did say that she doubted the claim because supplements are not regulated at all by the FDA.



Advertising for products made by Joe Weider Health and Fitness ran into difficulty even with the Reagan-era FTC. Based on numerous consumer complaints, in 1985 the FTC charged that ads for Weider's Anabolic Mega-Paks and Dynamic Life Essence exaggerated their properties when they claimed they could induce muscle growth. Weider's company agreed to a consent payment of \$400,000 to consumers who had purchased the pills. Ads for Weider nutritional supplements now carry a small-print disclaimer: "As with all supplements, use of this product will not promote faster or greater muscular gains. This product is, however, a nutritious low-fat food supplement which, like other foods, provides nutritional support for weight training athletes." No other supplements manufacturer puts such disclaimers in their advertising.

## **VI. THE NUTRITIONAL SUPPLEMENTS/MAGAZINE NEXUS**

A slew of muscle and body-building magazines have appeared in recent years, and the circulations of others have mushroomed. Several magazines are owned by supplements or athletic equipment manufacturers. The two main bodybuilder organizations, which sponsor the sport's major competitions, are the International Bodybuilder Federation and the World Bodybuilding Federation. Both are owned by bodybuilder magazine publishers and/or supplements manufacturers. Bodybuilders appearing in the magazines and in competitions sometimes are shown in magazine advertisements endorsing nutritional supplements products.

Below are the leading magazines, as well as some of their connections with the world of body-building nutritional supplements and competitions:

1. *Muscle Training Illustrated*, Hercules Publishing Inc. 300 W. 43rd Street, NYC. Founded by Dan Lurie. Also publishes, *Fitness Plus*.

Lurie runs a New York store (in Queens, Dan Lurie Fitness World) selling his line of exercise equipment, as well as body builder diet supplements, like Hot Stuff Hormone Potentiator. Lurie also headed the now-defunct World Body Building Guild. In addition, he owns the Dan Lurie Barbell Co.

In 1980, a court ordered Lurie to pay \$75,000 to Lou Ferrigno, who played the green-skinned Incredible Hulk in the TV series, for improperly making it seem like Ferrigno was

endorsing commercial protein supplements. Actually, Ferrigno said, the photographs Lurie used were eight years old, and had been taken when he posed for a possible tanning lotion advertisement. Several years ago, Lurie and his son Mark were sentenced to five years' probation and ordered to pay \$31,000 each in restitution, and to pay fines, for unauthorized use of a postage meter.

2. *Muscular Development*, Advanced Research Press, 2120 Smithtown Avenue, Ronkonkama, NY. Editorial offices: 351 W. 54th Street, NYC. Affiliated with TwinLabs, a maker of nutritional supplements. Issues typically carry numerous full-page and double-page TwinLab ads.

3. *Musclemag International*, Canusa Products/Foote & Davies, 3700 Northwest 12th, Lincoln, NE. Robert Kennedy, publisher. Foote & Davies was recently bought by American Signature.

4. *Bodybuilding Lifestyles*, a new magazine, published by Titan Sports, 1241 East Main Street, Stamford, CT. Affiliated with the recently-organized World Bodybuilding Federation. Titan Sports is owned by Vice McMahon, who was reported in *The Ottawa Citizen*<sup>36</sup> as having amassed a personal fortune of \$100 million, much of it earned from his creation, the World Wrestling Federation, which transformed professional wrestling into a mass spectator sport. His complementary WBF is intended to compete with Joe Weider's International Federation of Body Builders.

The WBF held its first championship in Atlantic City last year. A videotape of the event sells for \$59.95. A syndicated TV show is also being developed. The magazine is intended to "cross-promote" the tapes and WBF personalities, according to *Billboard*.<sup>37</sup> In a recent issue of *Bodybuilding Lifestyles*, 8 of 16 full-page advertisements were for nutritional supplements.

5. The following two magazines are published in affiliation with the World Natural Body Building Federation:

*Men's Exercise*, published by Pumpkin Press, Inc., Empire State Building. Geared toward men who are more interested in exercise than steroid-aided bodybuilding. Nevertheless, the

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<sup>36</sup> "The ABC's of WWF," 11/28/91

<sup>37</sup> "Coliseum Flexes Its Muscles In the Body-Building Field," 9/28/91.

magazine still contains a full page ad for "Ripped Fast Fat Burner," which claims to "accelerate the fat burning process...when used with any type of exercise program," along with ads for Cybergenics, Malepak Energy Formula, and Amino 2100, which promise amazing results.

*Natural Physique*, started five years ago. We were unable to obtain a copy for review.

6. *Ironman Magazine*, published by Ironman Publishing in Santa Monica, CA, John Balik, Publisher. A much-smaller competitor to Weider's magazines. Circulation in 1989 was 80,000, according to the *Los Angeles Times*.

7. Weider Health and Fitness of Woodland Hills, California, publishes *Flex*, *Muscle & Fitness*, *Men's Fitness*, and *Shape* magazines.

The biggest supplement-maker is Weider Health and Fitness. Weider controls a huge marketing enterprise with annual revenues in excess of \$350 million. This combine runs not only the four magazines, but companies that produce diet supplements, mainstream vitamin products, exercise equipment and sports entertainment. It also sponsors body-building competitions and related spin-offs.

According to a profile in the *New York Times* (12/3/89), Weider "has been sued many times for breach of contract. Just this year, he was charged with an antitrust violation, but the case was dismissed for lack of evidence. Nutrition and exercise experts have complained that Weider's products are merely high-priced placebos."

**a. The Weider magazines.**

Weider started his first magazine in 1940. By 1947, *Your Physique* had developed enough of a circulation to move it to New York from Montreal. A 1988 article about Weider in *Newsday* reported that "From the start, he was quick to formulate products to sell to his readers. Vitamin supplements and exercise equipment became such a profitable mail-order business that the magazine looked like a catalog for the goods."<sup>38</sup> His magazines now include:

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<sup>38</sup> Rusty Unger, "Pumping Gold," *Newsday Sunday Magazine*, 1/10/88.

*Flex*. One of Weider's two magazines for serious body builders. A substantial portion of each issue consists of advertisements for Weider nutritional supplements.

*Muscle & Fitness* is Weider's other magazine for serious body-builders. Circulation has increased from only 60,000 in 1979 to 600,000 in 1989.<sup>39</sup> Essentially, it is a promotional vehicle for Weider products. A recent issue we examined contained 256 pages, of which 54 were ads for Joe Weider products, mostly the nutritional supplements.

*Shape* is the Weider magazine specifically targeted at women who work out. Unlike the other Weider publications, it carries general interest ads for automobiles (Chevrolet), bottled water (Evian), shoes (Reebok) suntan lotion (Hawaiian Tropic, Coppertone) and soap (Lever 2000). It also runs ads for Weider products, like Schiff vitamins, but the ads for hard core muscle-man products like "Dynamic Weight Gainer" are missing.

*Men's Fitness*. We were unable to obtain a copy of this magazine to review.

Some of the non-Weider ads appearing in his magazines are published because of special relationships with Weider. Body-builders sometimes endorse Weider products, "in return for freespace to advertise" their own mail-order companies and products," according to an account in the *New York Times*.<sup>40</sup> An ad by The Bosley Medical Group for a baldness remedy featured a picture of Joe Weider, himself, with Dr. Bosley, recommending the treatment.

Twin Labs, one of the other major supplements makers, sued Weider in 1989 for violating the antitrust laws because he would not accept \$800,000 worth of TwinLab advertisements in his magazines; TwinLabs argued that advertising in Weider's publications was so important for his industry that Weider possessed a monopoly. The case was dismissed for lack of evidence, although we noted no TwinLab ads in any recent Weider publication.

Weider's magazine editorial content also can extol Weider products. One such article appeared in the August, 1991 issue of *Muscle & Fitness*<sup>41</sup>. Written by Ed Coan, a world

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<sup>39</sup> Source: "There's Gold in Pumping Iron," *New York Times*, 12/3/89.

<sup>40</sup> *Ibid*.

<sup>41</sup> Ed Coan and James E. Wright, "So You Wanna Get BIG? - Power Nutrition Packs on the Muscle!" *Muscle & Fitness*, 8/91 p.72-74

power lifting champion, the article examined the nutritional necessities of a power athlete. Apparently, although Coan writes that he actually doesn't "like to take a lot of pills," he still recommends a supplement program that includes at least 56 tablets and capsules a day! The following is a listing of "Ed Coan's Supplement Program":

*Breakfast (8 a.m.).* 3 Powerbase tablets, Smilax and Ginseng capsules, 1 Biochromium capsule, 2 Chelated Mineral capsules, 4 Aminobase 10/30 capsules

*Pre-workout (10 a.m.).* 5 Inosine capsules, 3 Antioxidant capsules

*Post-workout (11:30 a.m.).* 1 Post-workout packet, 5 Aminobase 10/30 capsules

*Lunch (12:00).* 2 Powerbase tablets, 2 Smilax and Ginseng capsules, 2 Chelated Mineral capsules, 5 Dynamic Life Essence Free Form Amino capsules

*Dinner (4:30 p.m.).* 2 Powerbase tablets, 1 Biochromium capsule

*Early Evening Snack (8 p.m.).* 1 Power Shake with low-fat milk, 2 Smilax and Ginseng capsules

*Late Evening Meal (10 p.m.).* 1 Powerbase tablet, 2 Antioxidant capsules, 2 Chelated Mineral capsules, 4 Aminobase 10/30 capsules, 5 Dynamic Life Essence Free Form Amino capsules

The following is an itemized estimation of the cost of this program:

#/day	Product	cost per unit <sup>42</sup>	total daily cost
8	Powerbase	\$0.1530612	\$1.22
6	Smilax and Ginseng	0.0555555	0.33
2	Biochromium	0.2166666	0.43
6	Chelated Mineral	0.0833333	0.50
13	Aminobase 10/30	0.1785714	2.32
5	Inosine	0.5	2.50
5	Antioxidant	0.1777777	0.89
1	Postworkout packet	1.0714285	1.07
10	Life Essence Aminos	0.1666666	1.67
1oz.	Power Shake	0.9375	0.94
<b>Grand total: 56 pills and capsules and one shake:</b>			<b>\$11.88</b>

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<sup>42</sup> Prices were obtained and calculated using a mail-order form provided in that same issue of *Muscle & Fitness*. Prices do not include shipping and handling which ranged from \$1.50 to \$3.00 per item.

Although clearly designed for his intense routine as a power lifter, Coan still recommends an expensive supplement program which he admits cannot "take the place of an adequate performance diet." The program provides large, worthless amounts of nutrients and minerals that could be easily obtained through a well-balanced diet without supplements.

**b. Weider nutritional supplements.**

In 1989 Weider controlled some 35% of the sports nutritional supplement market.<sup>43</sup> His products are available in over 12,000 retail outlets.<sup>44</sup> In 1986 Weider bought Tiger's Milk brands, which makes high-nutrition bars.

**c. The International Federation of Body Building (IFBB).**

The Weider empire includes not only a huge share of the supplement business, but also the increasingly lucrative International Federation of Body Building (IFBB), headed by Ben Weider, Joe's brother. Through sponsorship of the athletes associated with the IFBB, the company has a built-in source of endorsements for their products. These endorsements take the usual forms of testimonials and also include articles such as the one by Coan examined earlier.

**d. Gymnasiums, equipment and apparel.**

Weider Franchising is helping entrepreneurs set up their own Weider gyms. The solicitations guarantee owners "Access to Joe Weider's Entire Line of Performance Supplements...for Pro Shops." The athletic equipment division has annual sales of over \$185 million, sold through 6,000 retail outlets. Weider also owns a manufacturer of athletic injury prevention products and sells Weidercare Cross-Training Wear.

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<sup>43</sup> *New York Times*, op. cit.

<sup>44</sup> **Joe Weider** products include: Bio Chromium, Isonine ATP, L-Carnitine with Lipotronics, Ferulic Acid, Coenzyme Q10 with Cytochrome C, Smilax and Siberian Ginseng, EZ Spin-Lock Triceps Bomber, Restore, Mass, Power, Adapt, Foundation, Dynamic Life Essence, Dynamic Body Shaper, Dynamic Muscle Builder, Dynamic Weight Gainer, Megabolic, Carbo Energizer, Amino Acids, BIG Chewables. **Victory Products** (Joe Weider) include Victory Anabolic Mass, Anabolic Cuts, Anabolic Power, Anabolic Energy, Ammonia Scavengers. **Related Schiff (owned by Weider) products include:** Total Amino Acids, L-Arginine and L-Ornithine, Branched Chain Amino Acids, L-Lysine and L-Cytesisine, DL-Phenylalanine and L-Tyrosine and L-Glutamine, L-Carnitine and L-Phenylalanine,

## **VII. CAVEAT EMPTOR**

Most ads play upon the hopes and dreams of athletes and dieters who wish to achieve "fat-free" bodies with large, well-defined muscles. Like the search for the mythical fountain of youth, bodybuilders hope for a secret formula or simple pill that can help burn off pounds of persistent fat. Many reach a point in their training where they feel they can't grow any more without something to help improve their definition. Novice bodybuilders, especially teenagers, are looking for something to give them a boost to quick, easy results. These people are most susceptible to deceptive ads and are specifically targeted by firms selling these products.

Some of the often deceptive and misleading phrases to be aware of when reading these sorts of ads are listed here:

- Fat burner**
- Fat fighter**
- Fat metabolizer**
- Melts fat away**
- Lipotropic**
- Promotes reduction of body fat**
- Increases lean muscle mass**
- Adds muscle without fat**
- Converts fat into energy**
- Facilitates muscle growth**
- Rapid muscle growth**
- Performance booster**
- Energy enhancer**
- Strength builder**
- Ergogenic aid**
- Anabolic activator**
- Anabolic Drive**
- Get ripped fast**
- Maximum definition**
- Genetic optimizer**
- Optimizes metabolic processes**

Some of the advertisements (and promotional articles) suggest taking the product right before or even during the workout in order to immediately increase endurance and strength. This is nonsense. Dr. Herbert writes in **The Mount Sinai School of Medicine Complete Book of Nutrition**, "Performance during an event [or workout] is more dependent on food consumed in

the days prior to the event than on immediate pregame eating."<sup>45</sup>

None of the ads that were examined mentioned any potentially harmful side-effects, despite evidence that heavy doses of single amino acids can cause severe liver and kidney damage. Only one ad mentioned that teenagers should not take a particular product -- although all of the amino acid supplements on the market are especially risky for growing adolescents. There were no warnings either about the dangers of stimulating growth hormone in both adults and adolescents.

There is much evidence that single amino acids can, and do, interfere with the absorption of other amino acids. It is possible, therefore, that by taking large doses of one amino acid, such as arginine, one may become deficient in another, lysine. This situation can deprive the body of necessary protein and may lead to muscle *loss* instead of gain. Yet there are no warnings or indications of these dangers on any of the labels, in any of the literature received or in any of the advertisements examined.

### **VIII. REGULATORY ENFORCEMENT NEEDED**

The "Proxmire Amendment," as it is known, prohibits the FDA from regulating dietary supplements on the basis of efficacy, or from setting dosages on the basis of recommended daily allowances. It was enacted because the vitamin and mineral supplements industry was concerned about what they perceived to be FDA over-reaching when they tried to proscribe maximum vitamin dosages to prevent overdoses, and because of former Senator Proxmire's special personal interest in vitamins.

But there is nothing on the face of the Proxmire amendment that stops the FDA from taking enforcement action against many of the blatantly drug-like claims the supplements manufacturers make.

And the FTC has always had completely unfettered authority to act against false advertising of these products.

The time has come to announce that the amino acid business alone is a multi-million dollar

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<sup>45</sup> Herbert and Subak-Sharpe, eds., op cit., p. 92.



fraud. The FDA has the authority and the responsibility to ensure that an uninformed public is not duped and endangered by unscrupulous companies. We hope and expect that it will do so if the higher-ups in the Bush Administration don't stop it. But until they act, the Department of Consumer Affairs has the responsibility to detect and challenge false and misleading advertising under our local Consumer Protection Law. Consequently, we are taking legal action against six firms because their ads violate our statute, mislead consumers and take their money for an essentially worthless product. We cannot tolerate an economic hoax with unhealthy consequences.