

THE BEST SUPPLEMENTS FOR YOUR HEALTH

Revised and Updated - 2014 Edition

Part One: How To Choose and Use Supplements: Chapter Two

(Last Revised: January 2014)

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**The revised and updated version of this book is being provided in digital format. Each Chapter will be*

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PREFACE

As pharmacists, we (Don Goldberg and Arnie Gitomer) have a healthy respect for drugs and their benefits. When we were in pharmacy school, however, there was still a great deal of awareness that a large number of the drugs listed in the pharmacopeia were derived from natural sources. A substantial amount of the curricula back then was devoted to subjects such as pharmacognosy, the study of natural substances, particularly plants, that are used in medicine. Over the years, however, courses of this type have been dropped from most pharmacy schools.

Why? Advances in chemistry enabled the pharmaceutical industry to synthesize ever more powerful drugs. We were less dependent on natural products as sources of lifesaving therapeutic agents. Instead, we looked to the chemist's lab bench.

There were good reasons for this movement away from natural products. Supply problems were alleviated. Greater potency could be achieved. The drugs were more easily standardized, and they could often be made available in a more reproducible, convenient form.

And we cannot ignore the economic incentive. A drug derived from a natural substance cannot be patented. A synthesized chemical drug, on the other hand, can be patented, giving the pharmaceutical company an opportunity to recoup the cost of Food and Drug Administration approval, and earn a handsome profit for seven or more years.

As is usually the case, unfortunately, there is no such thing as a free ride. Along with this increased potency comes increased toxicity and the potential for undesirable side effects. When deciding on the treatment for a health problem, a choice has to be made. We have to evaluate the benefit versus the risk of the various options available to us. Killing a fly with a shotgun blast will work, but using a fly swatter might work equally well, without such extensive collateral damage.

In our opinion, the medical establishment became enamored with high-tech, high-powered solutions to many of the health problems facing us today and lost sight of the fact that more gentle, less toxic alternatives were available. There are times when a fly swatter is actually all that is needed.

And even better, put screens on the windows! In other words, prevention—prevent the fly from entering in the first place. Too often, I will hear a patient complaining that "the doctor gave me this prescription, and now I feel worse than I did before." Or the doctor says, "Your blood pressure is a little high—have this prescription filled!"

According to recently released medical guidelines, almost everybody should be taking a "statin" drug to bring their cholesterol levels down to the recommended levels. Is elevated cholesterol or heart disease caused by a deficiency of "statin" drugs? Is arthritis caused by a deficiency of aspirin?

It has been said that we are experiencing an increase in diabetes of almost epidemic proportions. Heart disease, obesity, and cancer are rampant. Is this because we have not yet developed newer or more powerful drugs? Of course not.

Instead, these serious health problems are related to changes in our lifestyles and environment. We do not eat healthy food, we do not get enough exercise, and we are exposed to pollutants and toxins that did not exist in our grandparents' time. We live longer, but not healthier.

It's easy to respond with an admonition to just eat the right foods, prepared properly, get more exercise, and move out of the city. This would be fine, and it is an appropriate goal to strive for, but it's obviously a goal that cannot be achieved by the average person.

We consider nutritional supplements and herbal medicines to be a valuable compromise, or a bridge, between the two extremes—unrealistic lifestyle changes and reliance on miracle drugs. These agents can provide us with the healthy components of foods in quantities that might be difficult or impossible to get through diet alone. They also provide those natural agents that, when ingested at higher levels, exert therapeutic action with fewer side effects than more powerful, synthetic drugs. They offer a convenient and effective way to augment our diet with agents that have been shown to ward off the onset of aging, cancer, heart disease, Alzheimer's disease, osteoporosis, birth defects—nearly all health problems.

The benefits of nutritional supplementation are now being recognized not only by the general public, but also by the medical community. Interest in these alternative "remedies" is at the highest level ever. Everybody is looking for more information on which supplements to use and how to use them. Factual answers to these questions can

be hard to find. Unfounded and exaggerated claims are easy to find. That is why we are writing this book.

The information we provide is designed to help you distinguish fact from hype. We want to help you choose the best supplements for your health.

HOW TO USE THIS BOOK

This book is not intended to be used as a replacement for professional medical advice. Instead, it is meant to help you understand the benefits associated with the use of nutritional and herbal supplements and advise you about how best to use these supplements.

The book is divided into two parts. In Part One, we will discuss what nutritional supplements are and the reasons for taking them. First, we will take you through a series of steps that will help you choose the right type of supplement. We will then teach you how to tailor a supplement program to your own unique health needs. And we will review how to best use the supplements you have chosen. We will also teach you how to tell the difference between a good supplement and a bad one, and how to separate unfounded marketing hyperbole from sound nutritional advice. We suggest you read through Part One in its entirety.

In Part Two, we will present information on specific dietary supplements. We have drawn this information from a variety of sources, including those listed in the bibliography. Some of the information is based on recent scientific study and some is based on traditional and historic usage patterns. We have tried to indicate the degree of reliability when appropriate.

In Chapter 5, we provide information on individual nutrients and herbs. Representative products are provided as well, with educational and evaluative annotations when appropriate.

In Chapter 6, we provide a selection of popular combination remedies designed for specific health conditions. Representative products are listed, with ingredient information when possible.

The mention of specific products is for educational purposes only and is not an endorsement. Similar products are available from numerous additional sources. By providing you with examples and pointing out their strengths and deficiencies, we hope to enable you to make better decisions when evaluating which products to purchase on your own. To make it easier for you to find those products and categories that pertain to your personal needs, we have provided a "Therapeutic Cross-Reference." Additional references and Internet links can be found on our website, www.bestsupplementsforyourhealth.com.

CHAPTER TWO: How to Choose the Right Supplement

Choosing a supplement is not always easy. Which supplements do you need? How do you choose a quality supplement? How should the supplement be taken? Is a capsule better than a tablet? Is there any potential interaction between the supplement and your medications? There are many choices to be made, some of which are highly individual and related to personal preference. Others require some knowledge of chemistry and physiology, and an ability to differentiate marketing hyperbole from fact. Your personal health problems and needs have to be considered. The information that follows will help you with these decisions.

Choosing the right supplements can be broken down into four steps:

- 1. Choosing the right type of supplement for you.**
- 2. Choosing supplements tailored to your unique health problems and needs.**
- 3. Choosing the specific brand or product to purchase.**
- 4. Incorporating these choices into a comprehensive program tailored to your needs.**

Step One: Choosing the Right Type of Supplement

Tablets and Capsules

Many people think that capsules are superior to tablets because they dissolve better or have fewer additives. This is not correct. A properly manufactured tablet will work just as well as a capsule. The so-called superiority of capsules in this regard is a myth propagated by some companies selling encapsulated supplements.

Theoretically, there may be times when a capsule could contain fewer additives, but this is true only in certain instances. Such a claim must be evaluated on a product-by-product basis and should be verified by full-disclosure labeling. In addition, you should take into account the composition of the capsule itself, which can contain additives as well. Is this really cause for concern? We will answer that question in the next section.

The main factor that should influence this decision is actually ease of swallowing. For many people, it is easier to swallow a capsule. Once it becomes wet, many feel that it slides down more easily. Others prefer tablets. This is purely a personal decision.

One advantage of tablets is that they are usually less expensive than capsules. It costs less to manufacture a tablet than it does a capsule. For those on a tight budget, it usually makes sense to buy tablets. Also, you can squeeze a greater amount of material into a tablet than a capsule. When we discuss multivitamin products later in the book, you will see that the same formula that requires four tablets will require six capsules.

In some cases, an encapsulated product may be more stable than a tablet. If the ingredients are subject to oxidation or are sensitive to moisture, the capsule may offer some additional protection, although tablets can be coated, which also can serve as a protective barrier. This is rarely significant when making your choice. Proper storage is more important. One example, however, where this protective function does come into play is with essential oils such as flaxseed oil. When buying oil, you will notice that it must be kept refrigerated. This is because oil is easily oxidized. But when flaxseed oil is put into soft gelatin capsules, refrigeration is not necessary because the capsule protects the oil from contact with air.

Both tablets and capsules, if manufactured by a responsible company, will be tested for disintegration and dissolution. These are standardized tests, provided for in the United States Pharmacopeia (USP), that show whether or not the product will dissolve and release its active ingredients after being swallowed.

The key here is a responsible company. Theoretically, it is probably easier to make a bad tablet than it is to make

a bad capsule. If the tableting process is not done properly and is not carefully monitored, and if the tablet is not formulated properly, a tablet that does not dissolve could be produced. It could be too hard, for example. If the company does not adequately test the tablets, they might not dissolve properly. If you buy products only from reputable companies, this should not be a concern, but if you insist on buying cheap products from questionable sources, you might want to stick with capsules.

Do not be misled by those who tell you to test a tablet by placing it in a glass of water or vinegar. This is not a valid test. The proper testing procedure for disintegration involves much more than this. A tablet may appear to disintegrate in a glass of water or vinegar, but that does not mean the active ingredients have dissolved. This requires a separate test, called the dissolution test, which determines if the ingredients actually dissolve and become available for absorption. And on the other hand, a tablet that does not appear to dissolve in a glass of water may very well dissolve under the proper testing procedures.

Disintegration is actually a measure of how completely a tablet or capsule breaks into small pieces so that its nutrient ingredients can more readily dissolve and be absorbed. A specified apparatus must be used that agitates the tablets or capsules in a measured up-and-down motion in water maintained at a temperature of 37° C.

The dissolution test, on the other hand, is a measure of how fast and completely a vitamin or mineral substance dissolves. If the tablet or capsule does not dissolve, its nutrient ingredients cannot be absorbed into the body to do their work. This test involves placing the samples in 0.1 normal hydrochloric acid for one hour, stirring constantly. Six separate samples of the solution are withdrawn during the test period, filtered, and analyzed for vitamin content. To pass, not less than 75 percent of the labeled vitamin content must have dissolved within the one-hour test period.

A vitamin supplement can disintegrate quite nicely, then, but still fail the dissolution test. In other words, disintegration does not guarantee dissolution or absorption.

In the past, capsules were made primarily of gelatin, an animal product. If you were a vegetarian, or if your religious beliefs forbade the ingestion of animal products, you were pretty much limited to tableted products. While tablets can also contain animal products, it was easier to avoid them when desired. Now, however, vegetarian capsules are available. Kosher and vegetarian supplements can now be obtained in capsules as well as in tablets.

For those who have a problem swallowing any type of solid dosage form, a capsule may offer some advantage. A two-piece hard capsule can be opened and the contents emptied into juice or food. A soft gel capsule can be pricked with a pin and the contents, again, added to food. This may be easier and more convenient than physically crushing a tablet.

THE PHARMACIST SAYS: According to the USP, the disintegration does not imply complete solution of the tablet or capsule, or even of its active constituent. It is defined “as that state in which any residue of the unit, except fragments of insoluble coating or capsule shell, remaining on the screen of the test apparatus is a soft mass having no palpable firm core.”

Powders and Liquids

Certain types of supplements lend themselves inherently to the powder or liquid form. Powdered protein and meal-replacement supplements are designed to be mixed with liquids and then administered as a drink. Certain fiber supplements are available as powders, capsules, and tablets. The amount of fiber needed after the initial acclimation period is usually higher than can be conveniently provided by capsules (you would need to take too many capsules), so the powder form is preferred. But for traveling or when eating out, the convenience of capsule fiber supplements may be desirable.

Vitamin supplements are available in powder form as well and a full description of this type of product, along with representative product samples, can be found in Chapter 6.

Theoretically, powdered vitamin supplements should be more economical than tablets or capsules, as one less

manufacturing operation is involved in their production.

Liquid vitamin and mineral supplements are available as well, but there are several limitations associated with products of this type. The main problem is stability. In liquid form, the various substances can readily interact with one another. This is why you often find vitamins and minerals in separate products. There is also the problem of taste. To make the product palatable, it is usually necessary to add flavorings and sweeteners to the liquid product. If it is necessary to use a liquid product (for example, for children or for those who cannot swallow tablets or capsules and do not want to be bothered with crushing tablets or emptying capsules), then do so. But read the label carefully. Refer to Chapter 6 for more information.

Hypoallergenic Supplements

Usually, natural supplements are considered preferable over synthetic products. But for those with food allergies or, more often the case, food sensitivities, this may not be the case. Hypoallergenic supplements contain minimal amounts of additives and may utilize synthetic sources of nutrients rather than natural sources. A good example is dl-alpha tocopheryl acetate, which is used rather than the natural d-alpha or mixed tocopherol form of vitamin E.

Hypoallergenic supplements avoid the most common allergens (wheat, dairy, corn, egg, soy). But you cannot rely totally on the term hypoallergenic. You must read the ingredient listing.

Allergies

Many people claim they are allergic to certain vitamins or minerals. Hogwash. You cannot be allergic to vitamins or minerals. A vitamin by definition is essential. In other words, you will die without it. If you are alive, you have the various vitamins throughout your body, and you must continue to ingest additional amounts if you want to remain alive.

If you were truly allergic to a vitamin or mineral, therefore, you would be dead.

Rather, you may be allergic, or hypersensitive, to certain components of vitamin supplements. There is a big difference. First, hyper-sensitive is a much broader, more encompassing term than allergic. You can be hypersensitive to a B-complex supplement because you cannot tolerate the aftertaste. You can be hypersensitive to vitamin-C supplements because you have a very sensitive stomach. You can be hypersensitive to vitamin-A supplements because belching up fish oil makes you nauseous. That is not an allergy. If you were allergic to fish protein, on the other hand, taking vitamin A from fish oil or cod liver oil could certainly be a problem. If you were allergic to soy oil, taking a vitamin-E softgel could certainly be a problem. But in each case, you are not allergic to the vitamin. You are allergic or hypersensitive to another ingredient that accompanies the vitamin. If you take a form of the vitamin that does not have that other ingredient, you will not have the problem.

Twinlab has a vitamin-A product (Allergy A Caps), for example, that is designed for people who are allergic to fish and fish oil. Allergy Research Group has a hypoallergenic vitamin-E product that contains dl-alpha tocopheryl acetate, the synthetic form of vitamin-E, which is soy-free.

Additives

Tablets and capsules contain various excipients—diluent, binders, flow agents, disintegrants—that facilitate the manufacturing process, enhance disintegration, and increase stability. These are, by law, generally recognized as safe (GRAS) food additives and present in very small quantities.

Think about this: A small capsule will hold about 400 milligrams of powder (depending on the density of the powder). We have a product that consists of 3 milligrams of melatonin. We cannot put only 3 milligrams of powder into a capsule large enough to hold 400 milligrams. Instead, we have to mix the 3 milligrams of melatonin with enough diluent to take up the remaining space in the capsule. This also improves the accuracy of measuring the melatonin, as it is much easier to accurately measure 400 milligrams (of a 0.75-percent dilution) than 3 milligrams.

The same holds true for vitamin B12.

The diluent is inert and hypoallergenic. It could be purified microcrystalline cellulose, for example, or dicalcium phosphate. Years ago, lactose was a common diluent, but because of potential problems for those who are lactose intolerant, it is no longer used in the dietary-supplement industry.

So for many products, especially those where the dosage is small, it is impractical, if not impossible, to avoid using some type of diluent. This is a problem for tablets just as it is for capsules. You will not find a capsule small enough to contain 3 milligrams of melatonin and nothing more.

Another commonly used additive is silicon dioxide, which functions as a drying agent or flow agent. To manufacture tablets or capsules, the powder must flow from the storage hopper into the tableting or capsule-filling cavity. If the powder becomes sticky or clumpy, it will not flow smoothly and consistently. Is anything wrong with silicon dioxide? Not at all. Silicon is an essential trace mineral and is often recommended as a supplement, especially for hair, skin, nail, and bone health.

To enhance the flow of the powder, lubricant additives are also commonly used. The best-known tablet lubricant is a combination of stearic acid and magnesium stearate. The only valid complaint against these was the fact that they were derived from animal products. For this reason, vegetable alternatives were developed and are now used almost exclusively in the dietary-supplement industry.

It is important to understand also that these agents are used in very small quantities. And they are used in the dietary-supplement industry only when absolutely necessary. This is not so much because of any real danger, but more because of the public's perception that additives are undesirable.

There is one exception. One question that often comes up is, "What is the difference between drugstore or mass-market vitamin supplements and health-food brands?" There is a difference. In the pharmaceutical industry, little restraint is exercised in the use of additives. Artificial colors will be added, for example, merely to make the tablet look nice. A synthetic vitamin may be used because it is less expensive, with little regard for other factors.

Natural Supplements

Many years ago, the term natural was an important part of dietary-supplement and health-food appeal. But today, it is somewhat overrated. Nobody knows what natural really signifies when it comes to dietary supplements, and the marketing folks have so overused it that it has become almost meaningless. With few exceptions, there is no legal definition.

There are, however, instances when natural is very important. The best example of this is vitamin E. Natural vitamin E may actually be twice as potent, or biologically active, as synthetic vitamin E!

When Natural Makes a Difference

Vitamin E is actually not a single entity. From a labeling standpoint, we only look at alpha-tocopherol content when declaring the potency of vitamin E on a dietary-supplement or food label. But there are actually seven other members of the vitamin E family—three more tocopherols and four tocotrienols. All eight of these compounds are present in the natural vitamin E found in food, but only one—the alpha tocopherol—is found in some supplements.

The reason for this is that the Food and Drug Administration (FDA) continues to use outdated nomenclature. Many years ago, the only method available to measure the potency of vitamin E involved its ability to affect the fertility of rats. Using this one measure of vitamin-E activity, the alpha tocopherol form was determined to be the most active of the eight components. The amount of alpha tocopherol was assumed to be most important, therefore, and was used as the measure of its potency, in International Units (IUs). This led to two problems.

First, it turns out that while alpha tocopherol may be most active in preventing reproductive problems in rats, the other components of vitamin E are more active in other areas. The tocotrienols, for example, seem to be more valuable in preventing certain heart-disease problems than the tocopherols. Synthetic vitamin E contains none of

the seven other components. The potency on the label (400 IU) refers only to the amount of alpha tocopherol. A natural, mixed-tocopherols vitamin-E supplement will provide much more benefit than one that contains only alpha tocopherol, even if the IUs are the same.

Second, the synthetic form of vitamin E, identified on labels as dl-alpha tocopherol, is less active than the natural form of vitamin E, identified on labels as d-alpha tocopherol. Notice that the difference is the prefix dl- or d-, with dl- indicating synthetic and the d- the natural form. Now, it has always been known that synthetic dl-alpha tocopherol is less active than natural d-alpha tocopherol. It was thought that the d- form was 36 percent more active than the dl- form, and for this reason, for labeling purposes, the FDA established the following rule: 1 gram of natural vitamin E is equivalent to 1.36 grams of synthetic vitamin E.

What does this mean? It means that if you have 100 milligrams of natural vitamin E (d-alpha tocopherol) in one product and 136 milligrams of synthetic vitamin E (dl-alpha tocopherol) in another product, they would both be labeled as containing 100 IU of vitamin E. And therefore, they would be equal in potency, as both indicate 100 IU of vitamin E (even though they contain different amounts of actual vitamin E).

Or would they? It turns out, based on more sophisticated analytical testing, the 1-to-1.36 equivalency figure is inaccurate. Instead of being 36 percent more active, natural d-alpha tocopherol is double the activity of synthetic dl-alpha tocopherol.

Synthetic vitamin E, therefore, is inferior to natural vitamin E mixed tocopherols for two reasons: dl-alpha tocopherol is less potent than natural, d-alpha tocopherol and synthetic vitamin E does not contain all eight of the naturally occurring components of vitamin E.

When Natural Does Not Make a Difference

In most cases, there is no difference between natural and synthetic vitamins. In fact, much to the surprise of many consumers, you could not put natural vitamins into most supplements even if you wanted to. It is just not possible.

Yes, vitamins and minerals occur naturally in food. But the quantities are very small. When taking supplements, we are accustomed to potencies that would be impossible to obtain from natural vitamins in food concentrates. To get 500 milligrams of vitamin C and 10 milligrams of the various B vitamins from natural sources would require a tablet the size of a football.

With a few exceptions—such as vitamin E, natural beta-carotene, and vitamin B12—all of the vitamins used in dietary supplements are synthetic. Regardless of what your local health-food store clerk or multilevel marketing zealot tells you, it's a fact. And it's also a fact that these synthetic vitamins are identical to their natural counterparts. To get high potencies of vitamins and minerals in a dietary supplement, synthetic or highly processed vitamins and minerals must be used.

You cannot have it both ways. High-potency vitamin levels in a product are always the result of added synthetic vitamins. Products without high potencies, on the other hand, are another story. A product that consists of or contains food concentrates will of course contain the natural vitamins native to that food. Many foods contain up to 90 percent moisture, so when dehydrated, their vitamin content can be increased up to tenfold. But this will still not provide the high potencies we have come to expect in our nutritional supplements.

Why not, you might ask, isolate the pure natural vitamin from the food? The answer is that it is totally impractical, prohibitively expensive, and serves no purpose because you would then end up with a pure vitamin that is identical to the synthetic one.

Misleading Claims and False Labeling

Here is one example of the type of intentionally misleading activity that used to be common in the dietary-supplement industry. Companies wanted to capitalize on the appeal of natural vitamins, so they attempted to find a way to make it seem that the vitamins in their product were natural.

For example, companies that manufactured bulk brewer's-type yeast supplied several types of modified yeast. A

type that was of interest to the dietary-supplement industry was fortified brewer's-type yeast. This product contained regular brewer's-type yeast with added quantities of B-complex vitamins, giving it a final vitamin concentration that was many times higher than regular brewer's yeast.

The label on the bulk drum of fortified yeast would merely say something like "Fortified Yeast, Type T6361." There would also be a small sticker on the drum with the actual ingredient listing. The listing would read: "Brewer's-type yeast, thiamine hydrochloride, riboflavin, pyridoxine hydrochloride, ascorbic acid." And the specification sheet that accompanied the product would provide the potency of the various B vitamins in the final product.

The dietary-supplement manufacturer would buy this "fortified" yeast and add it to the product. The potencies of the B vitamins would be listed on the label, but the only ingredient included in the ingredient listing would be the brewer's-type yeast. The consumer, when reading the product label, would mistakenly assume that the B vitamins were natural, derived from the yeast, when in fact they were synthetic vitamins that had been added to the fortified-yeast raw material before it was added to the final product.

It is a shame that the consumer can so often be misled by marketing hype embellished with deliberate obscurities and buzzwords. In the case of fortified yeast used to mislead buyers into thinking vitamins are natural, the practice is no longer common—due, perhaps, not so much to a resurgence of moral conscience as to the fact that yeast is no longer viewed as a desirable health food because of its (perhaps undeserved) association with *Candida* infections.

Instead, variations of the same approach seem to have emerged in the past few years, sometimes associated with vitamins that are claimed to be "grown" or "cultured."

Not Necessarily a Bad Thing

Now, there is no question but that taking a vitamin supplement with natural food concentrates and extracts is preferable. And we would have no complaint with a company that made the claim that its natural product was superior because it contained a significant amount of phytonutrient-rich food concentrates. There are many other components in food that are beneficial—the flavonoids, for example, in addition to the vitamins and minerals.

What we object to, however, is the implication that somehow this process has transformed the vitamins themselves into something else, something superior to synthetic vitamins. Just as we cannot turn lead into gold, we cannot change the molecular structure of a vitamin by co-drying it in a slurry of food concentrate or yeast cells.

This is important because such claims can actually get out of hand and cause health threats. Here are two recent examples.

When is 100 milligrams of calcium equivalent to 1,000 milligrams? If you were told that a certain product containing 100 milligrams of calcium in a special food-grown, or cultured, form was equivalent to 1,000 milligrams of calcium in a conventional supplement, would you believe it? Should women be misled into thinking that taking this product would be sufficient to protect them from osteoporosis?

Similarly, think back to the colloidal-mineral boom of a few years ago. There was a lot of hype about how itsy-bitsy, teensy-weensy quantities of minerals in a diluted colloidal suspension were somehow more biologically active and better absorbed than conventional minerals. Who cares? When you got down to the facts, all you had were itsy-bitsy, teensy-weensy (to use the technical terminology) amounts, and even if they were all absorbed, you still had only itsy-bitsy, teensy-weensy amounts! The danger was that people took these products instead of taking proper mineral supplements, thinking they were satisfying their mineral-supplement requirements.

Cheap Products

Much of the advice regarding cheap products is based primarily on common sense. If something seems too good to be true, it most likely is just that—too good to be true. If a product sells for around \$10.00 a bottle from all of the well-known companies, should you buy a bottle from a lesser-known company that sells for \$2.50?

When demand for a supplement is high, the amount sold to consumers often exceeds the amount manufactured. This can happen when a media personality makes claims about a new, previously little used supplement, for example.

How can the amount sold exceed the amount available? The answer must be that not every bottle contains what the label says it does.

Assurance of quality is essential. But it costs money. If you decide to buy a product that is suspiciously inexpensive, you may be getting exactly what you pay for.

Kosher and Vegetarian Supplements

What about people who because of religious or moral beliefs seek out products that are labeled as kosher or vegetarian? Such products are available and may be appropriate for those who need them. Some may be seeking out such products for the wrong reason, however, and getting something other than what they think.

A product labeled as vegetarian, or suitable for vegetarians, would be expected to contain no animal products. Does that mean it contains no milk or dairy foods? Does it mean that it contains no ingredients derived from meat, fish, or dairy products? Does it mean that a person who is allergic to milk protein can safely use the product?

A product labeled as kosher would be expected to contain no ingredients derived from those foods that are prohibited in the Bible. For those who are strict in their beliefs, this prohibition is carried to great lengths, and extensive precautions must be taken to ensure that no contamination with nonkosher materials takes place.

For the strictly observant, reading the ingredients on the label is not enough. The product must contain a special seal of approval by one of several rabbinical organizations whose duty it is to inspect and monitor the manufacturing process for total compliance with the kosher guidelines.

Third-party intervention in this instance can be helpful because it is not always easy to tell from the ingredient listing whether or not an item is meat- or dairy-free. Some people might not realize, for example, that gelatin is derived from animal tissue. They might not realize that capsules, unless the label says otherwise, are made with gelatin.

While that may seem obvious, what about stearic acid and magnesium stearate? These are not so obvious. These two ingredients are often used in tablets and capsules in very small amounts as excipients. Stearic acid is usually derived from animal fat.

In each of these instances, non-animal-derived alternatives are available. There are vegetable stearates and non-gelatin capsules available. You have to read the label carefully to ascertain which is being used in any given product.

If you have food allergies, you need to exert extra care. The label on a nondairy creamer is a good example. Can anyone be blamed for thinking that nondairy would mean the product contains no milk or milk-derived ingredients? The fact is that most nondairy creamers contain as one of their key ingredients sodium caseinate, a milk derivative.

But what about kosher products? Can you assume that a product is free of certain ingredients because it is certified kosher? The answer is no, and this may surprise many people. Shellfish (lobster, oysters, crab) are not kosher. Glucosamine, a popular nutritional supplement, is derived from shellfish. How, then, can a product containing glucosamine be certified as kosher?

Apparently it can be. In an attempt to get an explanation, we contacted one of the kosher certification groups, but were refused an explanation. We found this very disturbing. We can only speculate, then, as to what the reasoning may be, and our best guess is that the ingredient is sufficiently processed such that it, at least from a religious standpoint, no longer shares the properties of the starting material.

How Do You Read A Supplement Label?

See the print edition of *The Best Supplements For Your Health*, or go to http://www.crnusa.org/about_label.html

THE PHARMACIST SAYS: Another potential pitfall is the reliance on the term pareve on kosher foods to indicate -milk-free.” If you are allergic to milk, a product labeled pareve can satisfy kosher dietary law requirements for “milk-free,” but may still contain enough milk protein to cause a problem for milk-allergic individuals.

Step Two: Considering Your Unique Health Requirements

We have explained the role of supplements in preventing overt clinical deficiency diseases (scurvy, pellagra, rickets, beriberi). And we have pointed out that there is a difference between adequate and optimal when it comes to the amounts needed to ensure good health, vitality, and longevity.

A balanced multivitamin blend, with extra calcium and magnesium, may be all that is needed. In addition, an antioxidant blend would be a good idea. This may be enough to help prevent health problems, fight off disease, and retard the aging process.

But what if you already have a health problem? Or if you are at high risk to various diseases? You may have a family history of heart disease, glaucoma, diabetes, or cancer, for example. Or your lab tests show you have elevated LDL cholesterol. Perhaps your blood pressure is high. Or you are overweight and smoke cigarettes.

There are many situations (pregnancy, illness, stress, old age) that create additional nutritional needs, and there are diseases that can benefit from the therapeutic and healing actions of vitamins, minerals, and herbs. Your supplement program has to be modified to accommodate these additional problems. We will examine some examples in this section and then, in the next section, show you how to incorporate the prophylactic and therapeutic aspects of supplementation into an effective and comprehensive program.

Heart Disease

Cardiovascular disease is the leading cause of death in the United States. If you have a family history of heart disease or if you have elevated cholesterol, elevated LDL cholesterol, high blood pressure, or elevated homocysteine, you should consider using dietary supplements to control the condition or lower your risk.

Folic acid, vitamin B12, and vitamin B6 have been shown to lower homocysteine levels. Elevated homocysteine is thought to be a specific risk factor for heart disease. Supplementing with extra amounts of these harmless, inexpensive B vitamins may significantly lower your risk of heart disease.

Elevated cholesterol is another risk factor for heart disease. Supplementing with water-soluble fiber supplements (oat bran, psyllium, guar gum, pectin) can lower cholesterol. Many herbs (gum guggul, fenugreek, garlic) can lower cholesterol. Certain plant-derived substances, phytosterols and phytostanols, are very effective. Vitamins such as niacin and pantethine can lower cholesterol. The antioxidant vitamins can prevent the oxidation of LDL cholesterol. A combination of these nutrients and herbs can be as effective as drugs for many people, without the side effects.

Hypertension can sometimes be controlled with supplements. CoQ10, fish oils (EPA, DHA), calcium, garlic, hawthorn, coleus, European mistletoe, and olive leaf extract are some that have been used with success.

Those with cardiac arrhythmia should definitely consider extra magnesium in their supplement program. Those with angina should add additional CoQ10 and L-carnitine.

Several studies have found supplementation with 400 to 800 IU of natural vitamin E to be of general benefit to those with heart disease.

Eye and Vision Problems

Cataracts are the result of oxidative damage to the lens of the eye. Those at risk to cataract formation should definitely take additional vitamin B2 (riboflavin), vitamin C, carotenoids, and other antioxidants.

Age-related macular degeneration (AMD) is a leading cause of permanent vision loss in the elderly, as is glaucoma. Both conditions are considered to be irreversible, so prevention is important. Treatment of AMD with dietary supplements is accepted medically.

There are two forms, dry AMD and wet AMD. Ninety percent of the time, it is the dry form. The wet form of AMD usually begins as the dry form.

According to the Merck Manual of Diagnosis and Therapy, the treatment for AMD is (1) Dietary supplements (dry or wet), (2) Intravitreal anti-vascular endothelial growth factor drugs or laser treatment for wet AMD, and (3) supportive measures.

The acceptance of dietary supplements by conventional medicine as a treatment for AMD is due in part to a study published in the October 2001 Archives of Ophthalmology, publicized by the National Eye Institute, National Institutes of Health in 2001. The headline read “Antioxidant Vitamins and Zinc Reduce Risk of Vision Loss from Age-Related Macular Degeneration.”

While the study concluded that what they considered “high levels” of antioxidants and zinc significantly reduced the risk of advanced age-related macular degeneration (AMD) and its associated vision loss, they were unable to demonstrate the same effect on the development or progression of cataract.

“Scientists found that people at high risk of developing advanced stages of AMD, a leading cause of vision loss, lowered their risk by about 25 percent when treated with a high-dose combination of vitamin C, vitamin E, beta-carotene, and zinc. In the same high risk group — which includes people with intermediate AMD, or advanced AMD in one eye but not the other eye — the nutrients reduced the risk of vision loss caused by advanced AMD by about 19 percent. The clinical trial — called the Age-Related Eye Disease Study (AREDS) — was sponsored by the National Eye Institute (NEI), one of the Federal government’s National Institutes of Health.”

Now, before we talk specifically about nutritional supplements and age-related macular degeneration, I want to focus on a common mistake most people make. When a study such as this is published, and a particular combination of nutrients, at a certain dosage level, results in a positive outcome, the tendency is to run out and purchase a product that duplicates that regimen. The thinking is that this must be the optimal combination, the optimal dose, etc. That is not necessarily true.

In most studies of this type, the researchers did not compare different formulations and dosages to determine which combination and/or dosage was optimal. Instead, they sat down beforehand and decided what to use. Sometimes that decision is based upon the fact that a certain product is being provided to them. Oftentimes, the decision is based on previous research. Sometimes it merely a “best guess.” Rarely, if ever, should you conclude that the formula used is necessarily the best, because that type of comparison is not usually part of the study.

In the case of this AREDS study, the antioxidant formulation contained a combination of vitamin C, vitamin E, and beta-carotene. The specific daily amounts of antioxidants and zinc used by the AREDS researchers were 500 milligrams of vitamin C; 400 international units of vitamin E; 15 milligrams of beta-carotene; 80 milligrams of zinc as zinc oxide; and two milligrams of copper as cupric oxide. How did they come up with this combination? “In the study’s planning stages, a panel of nutritionists, ophthalmologists, and biochemists reviewed the basic science and epidemiological data and recommended these vitamins and dosages.”

So when the results were published, everybody ran out to buy formulations that mimicked this exact formula. And this might be a big mistake.

For one thing, in the actual study, they divided the participants into four groups. One group received the antioxidants alone (i.e. no zinc). Their risk of AMD was reduced by 17 percent, and risk of vision loss reduced by 10 percent. Another group received zinc alone (i.e. no antioxidants). Their risk of AMD was reduced by 21 percent and risk of vision loss reduced by 11 percent. The third group received a combination of antioxidants plus zinc. Their risk of AMD was reduced by 25 percent and risk of vision loss reduced by about 19 percent. A fourth group received a placebo.

What, then, is the proper conclusion? Do we look at this and run out to purchase a mixture of Vitamin C 500mg, Vitamin E 400IU, beta-carotene 15 mg, zinc 80 mg, and copper 2 mg? Many people do. Or do we say, “Wow! Antioxidant vitamins and minerals do indeed seem to have a profound effect on preventing AMD. Since I’m at risk, I certainly should make sure I am taking ample amounts of these nutrients as part of my supplement regimen.”

Do we look at this “AREDS” formula, and ask whether it would be better if we took natural vitamin E rather than the synthetic version they used? Even better, should we take a natural mixed tocopherol vitamin E. If the AREDS formula lists “dl-alpha tocopheryl acetate,” that is synthetic vitamin E.

Do we look at this “AREDS” formula and ask whether it would be better if we took natural beta-carotene rather than synthetic beta-carotene? Even better, would there be even more benefit if there was some actual vitamin A in the formula, rather than just beta carotene?

Do we look at this “AREDS” formula and ask whether it would be better if we took chelated zinc and copper rather than the oxide?

Do we look at this “AREDS” formula and ask whether it would be better if we included lutein and zeaxanthin in the regimen? Do we ask “if this collection of basic antioxidants was so helpful, might it not be even better if we included a broader selection of potent antioxidants in the regimen, antioxidants such as alpha-lipoic acid, glutathione and/or glutathione precursors, manganese, and phyto antioxidants such as those found in bilberry, ginkgo, grape skin.

The researchers demonstrated that one particular mixture of antioxidants was significantly beneficial in reducing AMD. They did not prove that this was the best mixture. They did not prove that other, similar mixtures might not be even better.

My advice—probably obvious by now—is to look at the bigger picture. You don’t need an “AREDS” formula. Instead, you need to make sure your total supplement regimen includes those nutrients—and more. You are probably already getting those nutrients, at those levels, in the various nutritional supplements you already take. The lesson you should be taking away from this research is that antioxidants are a key to the prevention and treatment of AMD.

You certainly do not want to limit yourself to an “AREDS” formula alone. There are other nutrients (lutein, omega-3 oils, vitamin A, ginkgo biloba, bilberry, goji, selenium, n-acetyl cysteine, alpha-lipoic acid, coenzyme Q10 or ubiquinol, acetyl-l-carnitine, etc) that are important. And tying all of this together with a good broad spectrum multivitamin multimineral is essential.

The Pharmacist Says: On a personal note, my primary area of health vulnerability is my eyes. I have had cataract surgery. I am already suffering partial visual field loss due to glaucoma. I have a family history of glaucoma. I was extremely myopic, which increases my potential for various retinal damage. Adjusting my supplement protocol to accommodate this problem is of the highest importance to me. I do not take an “AREDS” formula. Instead, I apply the lesson learned from that research by including the following products in my daily supplement regimen:

- Antiox Phyto Complex II (Willner Chemists, Code: 63745). This is a powerful blend of antioxidants from plant extracts (Acai Berry, Mangosteen, Goji, Pomegranate, Green Tea, Grape Skin and Grape Seed). Dose: One capsule twice a day.

- Blackcurrant with Lutein (Jarrow Formulas, Code: 55410)

Each capsule contains 200 mg of black currant extract, along with 10 mg lutein and 400 mcg Zeaxanthin.

Dose: One capsule twice a day.

- Omega Vision (Nordic Naturals, Code: 55601) A blend of omega-3 fish oil (High DHA to EPA ratio) with extra lutein (10 mg per softgel) and zeaxanthin. Dose: One or two softgels, twice a day.

- Willvite Multivitamin Multimineral (Willner Chemists, Code: 30439). A full spectrum, balanced multivitamin multimineral, with calcium and magnesium. It provides 30 mg of zinc, as an amino acid

chelate and 2 mg copper, as the gluconate. It also provides 300 IU of natural vitamin E and a total of 20,000 IU of vitamin A. That 20,000 IU of vitamin A is divided as follows: 15,000 IU as natural beta-carotene and 5,000 IU as actual, preformed vitamin A. This is a bonus when it comes to various conditions, including AMD prevention. And finally, it also includes 1000 mg of vitamin C, as ascorbic acid and calcium ascorbate along with all the other B-vitamins, trace minerals, etc. Dose: 2 tablets, two times a day.

- Alpha Lipoic Sustain 300 with Biotin (Jarrow Formulas, Code 59190, 32968)

A powerful, fat soluble antioxidant. It has been shown to have special value in glaucoma and diabetes. Dose: One tablet twice a day.

- Ubiquinol 100 mg (various brands, Jarrow Formula QH-Absorb Code: 59922)

Powerful antioxidant. Look for “Kaneka” trademark symbol. Dose: One softgel, two times a day.

Antiox Phyto Blend (Willner Chemists, Code: 57551). This is optional. It is similar to the Antiox Phyto Complex, above, but is a liquid (dropper bottle) rather than a capsule. I add a dropperful of Antiox Phyto Blend to my bottled water, my evening Margarita, as a way to get additional phyto antioxidants. It contains Acai, Mangosteen, Pomegranate and Goji. It has a mild, berry flavor and easily blends in with water, etc. Now, this is not my total supplement regimen.

I also take extra vitamin D3, GPLC (Glycine Propionyl-L-Carnitine, Probiotics, etc). But these are those products I count on to provide the specific nutrients shown to be protective (and perhaps therapeutic) for AMD prevention and other eye problems. Don Goldberg.

The above information on nutritional supplements and AMD was adapted from a post by Don Goldberg on his blog, www.dongoldberg.com.

Migraine Headaches

Studies have shown that people who suffer from migraine headaches can reduce the frequency of attacks by supplementing with magnesium. Other studies have shown that 400 milligrams of vitamin B2 (riboflavin) per day can reduce the severity and frequency of attacks by two-thirds. Many other supplements have been shown to be helpful, including 5-HTP, omega-3 oils, calcium, vitamin D, SAME, and the herbs feverfew, butterbur, and ginkgo biloba.

Wouldn't it be foolish for someone suffering from migraine headaches not to avail themselves of one or more of these simple treatments?

Pregnancy

The importance of supplementing with additional folic acid during and before pregnancy is now well recognized. But the importance of optimal nutrition during pregnancy is not so well recognized. Women who get by on the typical American high-sugar, high-fat diet under normal conditions should certainly not do so during pregnancy. Optimal nutrition is related to healthy, higher-birthweight infants. Nutritional needs are greater during this period, and supplementation is most important. Unfortunately, some women are frightened away from supplements by their physicians at a time when it is most important. Vitamin A is a good example. While it is true that too much vitamin A during pregnancy can be harmful, it is also true that too little vitamin A during pregnancy can lead to birth defects.

Benign Prostatic Hyperplasia

Men with benign prostatic hyperplasia have available a number of vitamin, mineral and herbal supplements that can be used to alleviate the condition. Saw palmetto has been shown to be as effective as the most popular pre-

scription drug, without the side effects. Zinc, beta-sitosterol, certain amino acids, and various other supplements should be a part of their supplement regimen.

Osteoarthritis

A person with osteoarthritis has many helpful supplements to choose from. There are the antiinflammatory, healing nutrients such as glucosamine, chondroitin, and MSM. There are natural COX-2 inhibiting herbs, such as ginger and turmeric. SAME can help, along with antioxidant vitamins. The herb devil's claw has been shown to help.

Diabetes

Alpha-lipoic acid, a powerful antioxidant, has been shown to improve insulin sensitivity and protect against diabetic neuropathy. This agent should be a part of the supplement program of anyone with diabetes. Other nutrients, such as chromium and magnesium, have been found to enhance glucose tolerance in diabetics. Diabetics may benefit from extra vitamin E, GLA-rich oils and/or omega-3 oils, CoQ10, and the B vitamins. Some diabetics benefit from L-carnitine, as it lowers cholesterol and triglycerides and may help alleviate nerve damage. Inositol may help with diabetic nerve damage as well. Fiber supplements can aid in glucose control, and herbs such as gymnema and bitter melon are often recommended.

Menopause

Impressive advances are being made in the use of natural phyto-estrogens (soy isoflavones and herbs such as black cohosh) in the treatment of menopausal symptoms. Calcium and magnesium supplements, along with ipriflavone, can help to ward off bone loss.

Anxiety and Depression

Several herbs are well known as effective in treating mild to moderate anxiety and depression. Kava kava is an excellent antianxiety agent and St. John's wort is an effective treatment for mild depression. But other nutrients should be looked at as well. Extra B vitamins can be helpful. High amounts of inositol can be helpful in treating anxiety. 5-HTP may be helpful in depression.

These are merely some examples of health problems that should be taken into consideration when designing a supplement regimen for each individual. Nutritional requirements differ with age and gender, and this should be reflected in the choice of nutritional supplements as well. Some choices are very transient. Addition of zinc lozenges, extra vitamin C, or elderberry extract at the early signs of a cold, for example, can significantly reduce the duration and severity of the infection. But the zinc should not be taken for more than two or three days. Lysine, vitamin C, and bioflavonoids may be helpful in treating an outbreak of herpes (cold sores, genital herpes), but it might not be desirable to take extra lysine over a long period of time. This will be covered in more detail in Step 4.

Step Three: Choosing Which Brand to Purchase

Now that you have decided what type of supplements you prefer and which specific vitamins, minerals, and herbs fit your unique individual needs, the next problem is to choose the actual products. How do you know which brand is best?

It's not easy. You have to look for clues and use some common sense.

Is Big Better?

In this case of a supplement company, big might indeed be better. The smaller the firm, the less likely they are to have the resources needed to ensure quality, potency, and stability. This does not mean that all large companies use their resources toward this end, but at least they have the ability to do so if they choose. Nor does it mean that a small company is incapable of producing quality products.

To ensure quality, you have to do testing. Total reliance on the supplier of raw materials and on the assurances of the private-label manufacturer (for those companies that do not manufacture their own products) may not be enough. You can send samples to outside laboratories for testing or you can have it done in-house, in your own analytical laboratory. Either way, it costs money.

Raw materials should be quarantined on arrival and not used until tested for purity and potency. Various types of tests must be run during the tableting or encapsulation phase (weight variation, hardness), and every stage of the manufacturing process must be checked and double-checked, from weighing of the ingredients to batch reconciliation after each step (weighing, mixing, tableting, coating, and packaging). The final product has to be tested for potency, disintegration, dissolution, etc. Controls and procedures in place during packaging are designed to prevent product and label mix-ups. And appropriate stability testing, both developmental and ongoing, should be performed.

Again, all of these quality-oriented functions cost money and must be factored into the cost. If a product is too cheap, one has to question whether these steps might not have been taken.

Distributed By or Manufactured For

You can tell if a company manufactures its own product or has it made by looking at the product label. If it is made by another company, the product will say "distributed by," "manufactured for," or something similar above the company name.

Does the fact that a company manufactures its own product necessarily signify it is of higher quality than products that have been made by a custom manufacturer? Not at all. It is true that for a quality-oriented company, it is easier to monitor all aspects of quality if manufacturing is done in-house. After all, you then have full control over the formulation, manufacturing, and packaging processes. On the other hand, if you are not a quality-oriented company, it might be easier to cut corners, cheat, lie, and deceive if you do not have to involve others in the manufacturing and testing process. So as you see, it is not where the product is made that counts. It is, instead, the integrity of the company that matters.

Custom manufacturers are experts in what they do. Some are honest and some are not. This is true in all industries. For a small or medium-size company, an outside manufacturer may have equipment, expertise, and capacity otherwise unavailable. Smaller companies may be better off spending their money on advertising and marketing, rather than on buying tablet presses and coating pans.

To ensure a quality product from an outside manufacturer, two things are necessary. First, the company for whom the product is being made must want a quality product and must be willing to pay for it. Second, it must be sufficiently knowledgeable to know what to ask for and look for when dealing with the supplier. This is where many problems arise because very often nutritional companies are started up by well-meaning entrepreneurs who know a lot about marketing and sales but little about manufacturing and quality control. They may not have actually inspected the manufacturing facility. Would they know what to look for if they did? They may not have specified shelf-life parameters and inquired as to how the expiration date was determined. Do they know what overages were employed? Have they actually seen the batch formula sheet and checked the calculations? Have they discussed the amount of analytical work required to be performed on each batch of product?

If the appropriate parameters are established by companies of integrity, a “distributed by” or “manufactured for” product can be as high quality as any made in-house.

THE PHARMACIST SAYS: I remember once when I was in the private-label powdered-protein manufacturing business. I went calling on a relatively well-known company with a line of powdered protein supplements. I asked for the opportunity to bid on making their product for them. When I returned and sat down with the principles of the company, I gave them my prices, which they acknowledged as being very competitive. But I pointed out that there were a few problems. In one case, the label indicated that the protein source was egg white and there were no coloring agents or other colored ingredients listed. But the product had a yellowish color. So I pointed this out and explained that I could not in good conscience manufacture their product for them with the ingredients listed on their label and have it come out with a yellow color. Initially, they were taken aback, either because they did not themselves know what was in their own product or because they were surprised at my honesty—but then they quickly lost interest and told me that they were happy with their current supplier and didn’t want to discuss it anymore. Don Goldberg

How Low Can You Go?

There is a point at which a product becomes too cheap. Let’s get serious. When you see a bottle of no-name cheapo-supreme CoQ10 advertised at a fraction of the price of reputable products and you can buy one and get six free—plus, if you order now, they throw in a 35 millimeter camera for free!—do you seriously think you are getting a quality product?

Certainly, many of us need to pay attention to price. There is no need to pay more than necessary. But if you are careful and patient, you can usually find reputable, well-known brand-name products on sale at discounts up to 30 percent or 40 percent off list price. This is especially true in the major metropolitan areas. Mail order is another alternative, but only if you stick to well-known national brands. There are certain brands that are high quality and priced very competitively.

But if the price is too good to be true, it probably is.

The Bottle in the Window

There are some health food stores that display products on shelves right inside the window. When you are on the street looking into the store, you see the backs of actual products on display. When the sun hits the window, it heats up the bottles. Heat contributes to the deterioration of nutritional supplements.

Do not buy products from stores that may have stored or displayed the items inappropriately. Likewise, if a product is supposed to be refrigerated, it should be on display in a refrigerator, and if the store has a storage area or warehouse, it should have been refrigerated there as well.

The Recommendation

You’re in the health food store, looking at the various products on the shelf. Perhaps there is a brand on sale that you have not used before or maybe it is a name you’ve never heard of. So you ask the clerk, “Is this a good product?”

What you should do is ask yourself, “What are this person’s qualifications? Why would he (or she) be capable of evaluating the quality of any given product or brand?” Does he have a scientific background, so that he can separate marketing hyperbole from scientific fact? Has he spoken to anyone from the company other than a sales representative? Has he actually visited the company? Is he getting some type of kickback for selling certain prod-

ucts?

A common tactic in certain stores, especially large health food store chains, is what is called “bait and switch.” This can take several forms, but one is very obvious. The store will display the well-known, national brand of a product on one shelf, and right below, it will display the same products under their own house-brand label. You are then pressured to buy the house brand rather than the national brand.

What about a recommendation from your doctor? Most doctors, either directly or indirectly, will admit that they know very little about what distinguishes a high-quality brand from a poor-quality brand. The others will claim they know and perhaps make a recommendation. Doctors are very knowledgeable individuals. They know a great deal about medicine, diagnosis, and treatment. But they don’t usually learn about pharmaceutical manufacturing in medical school. They usually learn about products from sales representatives and detail men who, as you might expect, have a tendency to exaggerate. It is very difficult to find a salesman who will not tell you that his products are “the best.”

Those doctors who are quick to make recommendations sometimes have ulterior motives. If they sell the products they recommend, their motives may be suspect.

Professional Brands

The good news is that doctors are more supportive of nutritional supplements and herbal remedies than they used to be. Many have come to realize the value of combining conventional and alternative therapies. Some have adopted the term complementary medicine to describe this new approach.

The bad news is that a small number of health professionals have taken this a step further and turned it into a business opportunity. They have become supplement retailers. Some involve themselves in multilevel marketing, which we discuss in Chapter 4. Others just stock and sell certain brands of dietary supplements.

THE PHARMACIST SAYS: Some might argue that it is okay for physicians to sell nutritional and herbal supplements from their offices. But the American Medical Association (AMA), in its ethics guidelines, states: “In-office sale of health-related products by physicians presents a financial conflict of interest, risks placing undue pressure on the patient, and threatens to erode patient trust and undermine the primary obligation of physicians to serve the interests of their patients before their own.”

The AMA cautions physicians who choose to sell health-related products from their offices to “not sell any health-related products whose claims of benefit lack scientific validity.” And they warn that, “because of the risk of patient exploitation and the potential to demean the profession of medicine, physicians who choose to sell health-related products from their offices must take steps to minimize their financial conflicts of interest.”

For one thing, as we said above, the AMA suggests that physicians limit sales to products that “serve the immediate and pressing needs of their patients.” It suggests that if products are distributed to patients, they should be done so free of charge or at cost. This will avoid the appearance of personal gain and possible “financial conflicts of interest that may interfere, or appear to interfere, with the physician’s independent medical judgment.”

The AMA goes on to require that physicians disclose fully the nature of their financial arrangement with a manufacturer or supplier. This would include informing patients “about the availability of the product or other equivalent products elsewhere.”

What about the so-called professional lines? According to the code of ethics, “physicians should not participate in exclusive distributorships of health-related products which are available only through physicians’ offices.” The AMA acknowledges that these products may be of established benefit. But it suggests that if this is the case, physicians should encourage the manufacturers to make the products more widely accessible to patients than exclusive physician-distribution mechanisms allow.

Is this a bad thing? According to the ethics guidelines of the American Medical Association, “The relationship between patient and physician is based on trust and gives rise to physicians’ ethical obligations to place patients’ welfare above their own self-interest and above obligations to other groups, and to advocate for their patients’ welfare.”

The ethics guidelines say all that needs to be said about the pros and cons of physician retailers. More to the subject of this book is the question of the products being sold. Often, perhaps to justify the fact that they are being sold by the doctor or at a high price, the patient is told that these professional-brand products are superior to those found in retail stores.

This is simply not true. There are high-quality professional lines and there are high-quality retail lines. There is no reason to think that one is higher quality than the other. And it is also highly unlikely that products similar to these cannot be found from other sources.

Are there certain attributes that might distinguish these products from those found in stores? There can be. If the line specializes in hypo-allergenic products, for example, the physician may feel more comfortable recommending products from that line if he deals with many patients with allergies. In some cases, these professional lines contain products that are designed for use as part of an integrated therapeutic protocol, and it might not be appropriate for the patient to use the products unless they are under the supervision of the physician. Some of these products are not labeled for retail display. For example, how would a consumer looking at products in a health food store know what Formula XYZ-29B is for?

So, there may indeed be a valid role for supplements that are designed specifically for use under the supervision of physicians, and there may sometimes be justification for physicians making these products available to patients directly from their office.

But is there a valid role for a line of supplements bearing the doctor’s label that can be obtained only from his office? Is there justification for physicians selling a line of products from their office that cannot be obtained anywhere else, including pharmacies? It’s hard to understand how a pharmacy, entrusted with the overseeing and dispensing of the most potent and powerful prescription drugs, cannot be trusted to dispense certain brands of professional vitamin products.

The truth of the matter is that those brands that can be obtained only from the doctor are restricted in this manner merely to protect the doctor’s financial interest. The company’s sales representative goes to the doctor and says, “Hey, Doc, you should carry my line because the patient will not be able to buy it anyplace except from you.”

This practice, by the way, is not limited to doctors. The same approach is used by many health food store product lines. Certain companies refuse to sell their products to mass-market stores or pharmacies, and the reason is the same. The sales representative goes into the health food store and says to the proprietor: “Gee, times are tough, aren’t they? People are going to the drugstore down the block instead of coming to you to buy their vitamins. Well, they can’t get our line over there. We sell only to health food stores.”

But let’s get back to professional lines and doctors. If the doctor pressures you into buying products from his office, at full price, especially if there are no alternatives, there may be reason for concern. If, on the other hand, he offers products as an accommodation and is open about alternative sources, there may not be a problem. Ask the doctor if you can buy the same product elsewhere. Perhaps you are on a limited budget. Can he recommend some other brand so that you can save a little money?

There is nothing wrong with many of the professional brands. They are quality products and, as we said above, may be specifically formulated for various therapeutic protocols that should indeed be used under the guidance of a health professional. We will be mentioning some of these products in Chapters 6 and 7.

Expiration Dates and Stability

Some consumers have been told not to buy a product that does not have an expiration date on the label. Yes, cer-

tain vitamins deteriorate over time and if the bottle has been sitting on the store shelf for a year or so, you might not be getting a product that's up to full potency. But, I'm sorry to tell you, the fact that the bottle has an expiration date on it does not necessarily mean it is any more likely to be up to potency than some similar products without expiration dates.

First, there is not yet any legal requirement that supplements bear expiration dates. This is expected to change and may very soon. But the problem is in how one determines what the appropriate expiration date should be on a given product. This should be a function of the stability, or shelf life, of the product. At the time of manufacture, the supplements should contain at least the full label claim. And at the end of the product's designated shelf life, none of the nutrients should be present in amounts less than 95 percent of the label claim.

How does a reputable supplement manufacturer design a product that will maintain a potency of not less than 95 percent of label claim over a period of two or three years when stored on the shelf of a health food store? And what will be the consequences if it is determined that after two of the three years of designated shelf life, one of the vitamins has dropped to 90 percent of label claim? Does the company recall the product?

If the company takes this seriously, assigning a meaningful expiration date to a product is not something to be taken lightly. What can be done to assure that the product will be stable over that period of time? Care can be taken to select and combine ingredients that will not interact with each other. Sometimes stabilized versions of certain ingredients can be utilized. Overages can be used. If vitamin C, for example, is known to lose about 5 percent of its potency each year and you want a three-year expiration date, you would start off with 115 percent of label claim. This way, at the end of three years, the product will contain more than 95 percent of claim. Each vitamin will require a different overage, based on its stability characteristics. Precautions can be taken during manufacture to ensure minimal loss of potency due to moisture, heat, oxidation, etc. The choice of packaging materials—glass versus plastic—can have a significant effect on stability as well. Vitamins packed in cellophane packets in a cardboard box will not have as long a shelf life as those packaged in glass bottles.

All of these formulating techniques and manufacturing precautions, however, are only the first step in the process. The finished product has to be tested.

The most accurate test would be to take a few cases of the final, packaged product, put them in a storage room maintained at standard conditions of temperature and humidity, and run assays on each ingredient every six months for two or three years. If at the end of the test period, all of the assays were 95 percent of label claim or more, you could then market the product with a meaningful expiration date.

If any changes are made to the formulation or the packaging, of course, the entire testing process would have to be started over again.

Obviously, this is not a very practical approach. Few companies could afford to wait for three years of testing each time they wanted to introduce a new product or modify an existing product. So what you do instead is set up an accelerated stability test. This involves taking quantities of a product and storing them at different temperatures for a shorter period of time, perhaps for three months. Assays are run on each set of products and the results from the higher temperatures are mathematically extrapolated to room-temperature storage. This technique can give an adequate approximation of stability upon which an expiration date can be determined.

THE PHARMACIST SAYS: There is currently some controversy over the use of overages. Some claim that too high an overage is a violation. Historically, however, it has been felt that an excess amount of innocuous substances (such as the B vitamins) can be added in whatever overage is needed to achieve the desired shelf life. Obviously, putting 100 percent overage of vitamin A into a product cannot be tolerated due to potential toxicity issues. In general, overages of more than 5 percent to 10 percent are rarely used.

Reputable companies follow procedures similar to this when placing expiration dates on their supplement products. Some reputable companies have refused to put expiration dates on their products until data of this type can be generated.

Less-reputable companies, however, are not so conscientious. Some companies just pick a date out of thin air and place it on bottles. They have no overages, they do no testing, and they are willing to gamble that no one else will do any testing either.

An expiration date, therefore, is not the assurance of quality you may have thought it was. In fact, in some cases you may be out-and-out deceived. The date means nothing. On the other hand, if a product has an expiration date and that date is near or past, you at least can use that information as an indication that the product is no longer fresh.

How do you know if the expiration date is meaningful or meaningless? Very often, you have no way of knowing for sure. You can ask the company. Ask it what it bases its expiration dates on? Does it have overages in its products? Does it perform ongoing shelf-life testing to verify that the products are still up to potency? What will it do if the tests show that a given product is not up to potency?

If you try to ask these questions, you will most likely find it a very frustrating experience. Instead, you may have to rely on the reputation of the company. Do not buy products from a store that does not move products in volume, regardless of the dates on the bottle. Be aware, once again, that doing the type of testing required is an expensive proposition, and those costs have to be reflected in the product cost. Placing overages in a product adds to the cost as well. In general, a very low priced version of a product is less likely to have had this type of quality built into it.

You can also ask the store personnel. But be aware of the caveats already discussed. Ask the clerk, proprietor, nutritionist, or pharmacist what he or she bases his or her opinion on. Has the person ever spoken to anyone other than the company's sales representative? Has the person seen analytical reports? Has the person visited the manufacturer? Does the person have an educational background sufficient to enable him or her to make a judgment of this type?

Many companies in the health food industry take matters of this type less seriously than they would have you believe. A short time ago, for example, it was revealed that a large health food store chain was knowingly selling expired merchandise. The company, in response to a lawsuit filed by one state's attorney general, agreed to a \$1 million dollar settlement. It was accused of selling vitamins that were as much as seven years old.

Remember that, in general, you get what you pay for. This does not necessarily mean that an expensive product is high quality, but it probably does mean that a very cheap product is low quality.

Testing Companies

There has been a confusing mish-mosh of private testing organizations, trade-group certification programs, and proposed semigovernmental analytical programs claiming to provide standards and analytical testing for nutritional supplements. This is both a good thing and a bad thing.

It is good that the importance of nutritional and herbal supplements is now recognized and that meaningful standards and regulations are being established.

Anything that will result in higher standards and product quality is certainly something to be supported by everyone interested in the continued growth and credibility of the dietary-supplement industry. But there are some serious drawbacks to what is available at this time. Currently, for example, when a private laboratory tests a selection of products purchased at random, they report on which products passed their test, but they refuse to divulge which products did not pass. This detracts from the credibility of the entire program. And those companies whose products passed the test cannot use that information unless they pay a fee to the testing company. This further undermines the credibility of the program.

If the testing company is unwilling to withstand the challenges sure to come about from those whose products it claims failed testing, how can we be fully confident in the validity of the results that will not be challenged? Isn't it more important for us to know which products did not pass?

This may be a step in the right direction, but further strides need to be made.

The National Nutritional Foods Association, a leading health food trade organization, has set up a program that awards a Good Manufacturing Practice (GMP) certification to those companies that pass its inspection program. This is a good thing, and we know of a number of companies that upgraded their procedures and facilities to ensure they passed the program. But there is a fee required for a company to participate. This imposes a burden on the smaller companies. And those companies who have their products made for them by several outside suppliers face the need to have multiple facilities inspected and certified.

Also, another source of possible confusion is that the seal, or certification, is not product specific. In other words, it does not mean that a given product has been tested or is certified to be up to potency. The seal merely means that the company follows good manufacturing practice guidelines.

Step Four: Putting It All Together

Now that you have decided which type of supplement is right for you, which supplements accommodate your specific and unique health needs, and which brands or sources you are comfortable with, it is time to put all of this together and set up a regimen tailored to your requirements.

Multivitamin Supplements

The first thing to do is decide on the product or products that constitute the nucleus, or foundation, of your program. This should be a broad-spectrum, balanced multivitamin-multimineral supplement, containing all of the essential vitamins, trace minerals, and perhaps calcium and magnesium. A B-complex formula would not fit this description.

There are four basic types of multivitamin supplements. They differ mainly in two areas: how many times a day will they be taken, and whether or not they contain adequate levels of calcium and magnesium.

The four types are as follows:

- One-per-day multivitamins
- Two-per-day multivitamins
- Complete, or four-to-six-per-day multivitamins
- Specialty multivitamins

One-Per-Day Multivitamins

As the name suggests, this type of multi is designed for a once-per-day dosage. While this may seem convenient to some, the disadvantages of products of this type are very significant:

- Limited effectiveness. Most of the nutrients contained in a multi-vitamin formula are water-soluble. This means that once they are absorbed, they are not stored in the body. Any excess over what is not used at the moment will be excreted. If you assume that most of the content of the one-per-day vitamin will be absorbed in an hour or two and metabolized and excreted in two or three more hours, you will certainly realize that within a half-day, most of what you took will be gone.
- Lack of calcium and magnesium. It is easy to fit 10 milligrams of iron or 15 milligrams of zinc into one tablet, along with the vitamins. But for calcium and magnesium, it is a different story. The amounts needed to provide the required level of these two essential nutrients is too great to fit into one, or even two, multivitamin tablets.

All one-per-day multivitamin products suffer from these two serious deficiencies. It does not matter what brand or what source you look at. Because they are taken only once daily, your body gets only limited benefit, and much of what is in the tablet is wasted. And unless you take a separate calcium-magnesium supplement, you are depriving

your body of two important nutrients—nutrients certainly no less important than the vitamins.

As we said above, a B-complex is not a daily multivitamin. While such a product may indeed contain plenty of B vitamins, it does not contain many other important nutrients, such as vitamin A, carotenoids, vitamin E, zinc, copper, and selenium.

Even the most potent one-per-day multivitamin products may be poor choices in this regard. People think they are taking a one-a-day multivitamin when they are not. This type of product might be more correctly categorized as a B-complex rather than a multivitamin.

Why is this? Well, a typical one-per-day tablet provides amounts of B vitamins that range from 3,750 percent to 5,000 percent Daily Value, while supplying only 25 percent Daily Value of biotin, 67 percent of zinc, 35 percent of selenium, 21 percent of chromium, and 50 percent of copper. While this type of product does indeed supply some of the fat-soluble vitamins, such as vitamins A and E, it certainly is not a balanced one-per-day type of formula. Perhaps it could best be called a high-potency B-complex one-per-day multivitamin. There may be occasions when a product of this type is appropriate, but not when you are looking for a balanced multivitamin to serve as the cornerstone of your supplement program.

So far, we have had nothing positive to say about the one-per-day type of product. Can we say something positive? Yes—it beats taking nothing!

The fact is that there are some people who adamantly refuse to take more than one tablet or capsule per day in spite of anything they are told. It is just too much trouble. Why worry about osteoporosis, heart disease, diabetes, and cancer now? Many, especially those in their younger years, make the mistake of thinking of these as distant concerns, to be addressed only later in life, in spite of the overwhelming evidence to the contrary. Some people insist that they cannot be bothered with the taking of “pills” more than one time per day.

For these people, I suggest one of the following approaches. Go ahead and take your one-per-day multi, but at the very least, take a separate calcium-magnesium supplement at the same time. If you can swallow only one additional tablet, use the type of calcium-magnesium product that contains around 500 milligrams of calcium and 250 milligrams of magnesium per tablet and take it with a meal.

Even better, especially from a convenience standpoint, would be to take only one or two of the complete, four-to-six-per-day type of product. It could easily be argued that one would derive greater benefit from taking one-half to one-quarter of the daily dose of a four-per-day multivitamin-multimineral than taking one one-per-day multi. The primary reason is that it would be better to get 250 milligrams of calcium and 125 milligrams of magnesium and only 10 to 15 milligrams of each B vitamin than to get 25 to 50 milligrams of each B vitamin and an insignificant amount of calcium and magnesium.

Two-Per-Day Multivitamins

As the name implies, two-per-day multivitamins are designed for a twice-daily dosage. This obviously negates one of the criticisms of the one-a-day product, assuming that one tablet or capsule is taken in the morning and the other in the evening. Taking two at one time would defeat the purpose.

However, the other problem—the lack of meaningful levels of calcium and magnesium—remains and is the major drawback of this sort of product.

But it is certainly better than the one-per-day formula. A product of this type, if taken with a separate calcium-magnesium supplement, can indeed constitute an adequate general-purpose regimen. There are some, however, who resist taking more than one product, and for that group, the next category is ideal.

Complete Multivitamin-Multimineral Supplements

Complete multivitamin-multimineral supplements are the easy way to go for those who do not want to compromise their supplement intake but who want the convenience of a balanced, one-product approach. For those who are looking for the foundation or cornerstone product in a comprehensive supplement program, this type of product is ideal.

With a recommended daily dose of four tablets or six capsules, it is now possible to not only include adequate levels of all the vitamins and trace minerals, but also to include meaningful amounts of calcium and magnesium. Typically, products of this type will contain from 800 to 1,000 milligrams of calcium, along with 400 to 500 milligrams of magnesium.

Such products are comprehensive and balanced, and combine convenience with efficacy. For certain population groups, such as the elderly, the simplicity of combining the necessary nutrients into the fewest products is a big advantage. For those who don't want to be bothered, taking two tablets of one product at breakfast and dinner may seem less intrusive than taking several different products.

Why four or six? A greater quantity of material can be compressed into a tablet than can be filled into a capsule. It typically takes six capsules, for example, to provide the same ingredient quantities as four tablets. Some companies offer the same basic formula in both options. Natrol, for example, offers My Favorite Multi in a tablet form (four per day) or capsule form (six per day). For the advantages and disadvantages of tablets and capsules, see Chapter 1.

Other examples of this type of product are Dualtabs by Twinlab and Willvite by Winner Chemists.

Specialty Multivitamins

This is a category that is somewhat a catch-all for all other types of multivitamin supplements. From a marketing standpoint, it is a popular category, with all sorts of special formulas being promoted—for example, energy formulas, men's and women's formulas, and green formulas.

The problem is that when looking for a product that is to function as the nucleus or foundation of your total supplement program, you have to be careful to not lose sight of what is really important—the essential vitamins or minerals. In other words, remember that your basic, foundation multivitamin-multimineral formula should contain, first and foremost, adequate amounts of all the essential vitamins and minerals required for optimal health.

If you want a product that contains additional nutrients, that's fine. Just be careful that these extra ingredients do not take the place of the basic, essential nutrients that must be present in your daily supplement regimen.

Calcium and Magnesium

The next most important components of your program are calcium and magnesium.

THE PHARMACIST SAYS: Here is a recap of the important features to look for in your foundation supplement:

- Whatever you call the product, if the daily dose is only one or two per day, it cannot provide all of the necessary nutrients, especially calcium and magnesium.
- Adding additional cofactors, food concentrates, herbs, and enzymes is fine, as long as they do not take the place of important and essential basic vitamins and minerals. The more room you take up in a tablet with herbs and enzymes, the less room you have for the vitamins and minerals. Always look at the label carefully and look at the amounts of the vitamins and minerals, especially calcium and magnesium.
- Beware of window-dressing. Tossing tiny amounts of numerous accessory food factors (sometimes referred to as chazzeri) into a formula to make it look more impressive is nothing but marketing hype. If you really need supplemental CoQ10, for example, the 10 milligrams in a multivitamin are not going to be enough. You will need to purchase a separate, higher-potency CoQ10 supplement. Likewise, 10 milligrams of unidentified ginseng, 5 milligrams of papain, or a “base of rose hips” is not going to make any difference.
- Beware of claims that because the vitamin is “derived” from something, or “cultured and grown” in some way, it is more potent than or different from other vitamins. Food concentrates and extracts are great.

Taking your vitamins with food, food concentrates, and natural cofactors is definitely desirable. But these types of ingredients do not take the place of the vitamins and minerals themselves.

Supplementing with calcium and magnesium is no less important than supplementing with vitamins. It is not something that should be put off until you get old. It is as important to men as it is to women. As mentioned previously, you have two options. You can choose to use the type of multivitamin supplement that includes 1,000 milligrams of calcium and 400 to 500 milligrams of magnesium in the daily dose of four tablets or six capsules or you can take a separate calcium and magnesium supplement.

There are many types of calcium and magnesium supplements from which you can choose and they are described in Part Two of this book. If you want to minimize the number of tablets or capsules you need, choose the calcium carbonate and magnesium oxide types of products, but be sure to take them with meals. If you cannot be sure of taking them with meals, or if your need for calcium and magnesium is more therapeutic than prophylactic, you should use citrate or chelated forms.

Antioxidant Blends

Now that we have satisfied the basic, foundation requirements for a broad-spectrum multivitamin-multimineral with calcium and magnesium, we can begin to customize your program to meet your unique needs.

What if you have no unique needs? You're just an everyday Joe who lives in our typical toxin-laden environment, who breathes smog and eats the typical sugar- and fat-rich American diet. Here is what we suggest. Add one additional product: an antioxidant blend. Take one in the morning and one in the evening along with your multivitamin, calcium, and magnesium. Check Part Two for suggestions on antioxidant formulas.

The Add-Ons

Most of us, however, will indeed have health problems or health concerns that need to be factored into the program. Maybe our blood pressure is a little high or our cholesterol reading is above normal. Or we're overweight and have diabetes. We are starting to experience the symptoms of arthritis. We feel tired all of the time. We have trouble sleeping. We are worried about Alzheimer's disease, macular degeneration, or the symptoms of menopause.

Not that you have to be old to experience health problems requiring specific supplements. Perhaps you understand, for example, that maintaining optimal bone density in your younger years will lessen your problems with osteoporosis in later years. Maybe you have a family history of heart disease and you don't want to fall victim to the same life-shortening condition experienced by your parents. You hope to become pregnant soon and you know how important preconception nutrition is for increasing your odds of having a healthy baby. Or you exercise regularly and want to maximize your performance and minimize your injury-related downtime.

What you need to do is go to Part Two of this book, *The Best Supplements For Your Health*, and check the Therapeutic Cross-Reference. Look at the individual vitamins, herbs, and other nutrients that are beneficial in treating those problems of interest to you. Then check Chapter 6 to find out if there might be a combination product that is appropriate.

These supplements, either individual or combination remedies, should be taken in addition to your basic foundation multivitamin-multimineral, not instead of it.