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For health professionals

DRUGS, SUPPLEMENTS, FOOD

by Judith A. DeCava, CNC, LNC

Sometimes medications are necessary, even life-saving. But many times drugs are not needed, are overused, and are harmful; sometimes they're downright dangerous. In 2011, US doctors wrote 4.02 billion prescriptions; that's an average of roughly 13 prescriptions for each man, woman, and child—about 1 per month. Each year more than 100,000 people die from adverse drug reactions and another 2,000,000 are seriously injured. The fourth leading cause of death in the US is **properly** prescribed pharmaceuticals. When improperly prescribed drugs are included, the death rank for pharmaceuticals comes in at **third** (after heart attacks and cancer). In 2009, there were more deaths caused by legal drug use than by motor vehicle accidents. Every year about 1.5 million people in the US have adverse drug reactions that are so serious, they need to be admitted to hospitals; that's more than 4,000 people every day. The Center for Medical Consumers explains: "The presumption that the FDA approval process guarantees safety is absurd. The two clinical trials required by the FDA are usually short-term and always conducted by the drug makers themselves. Rare or uncommon serious adverse reactions to drugs are typically not apparent until hundreds of thousands of people take the drug over the course of many years. Worse of all, drug companies are known to withhold negative trial results from the FDA." Because evidence about a drug's side effects can become apparent after it's approved, many doctors recommend a 'do not use' period—to avoid new drugs on the market for at least 3 years and up to 7 years.

Professor Donald Light, PhD, says that the pharmaceutical industry produces numerous "**lemon**" drugs that don't work. "Current incentives for research produce few [drugs] that substantially improve patients' chances of getting better or avoiding death but [produce] a large number of barely innovative drugs each year." Along with lower effectiveness comes a heightened risk of adverse effects, often severe. He based his conclusions on a wide range of data from independent sources and studies. One analysis of 111 final applications for drug approval found that 42% were missing data from adequately randomized trials, 40% were supported by flawed testing of dosages, 39% lacked evidence of clinical efficacy, and 49% raised concerns about serious adverse effects. "The incentives and institutional practices around testing and regulatory review predictably result in approvals being based on trials so biased and poorly run that no one knows how much better or worse new drugs are." In a press release he said, "Sometimes drug companies hide or downplay information about serious side effects of new drugs and overstate the drugs' benefits." Ultimately, many drugs are pulled from the market due to serious side effects—after many people are harmed or die—then **more** new drugs appear.

Drugs stimulate or suppress—force your body to do either more or less of something. No one knows all of their side effects. One reason is that adverse effects vary from individual to individual depending on age, degree of sensitivity, health status, nutritional needs, presence of other drugs, time of day, and more. Exposure to hormone disruptors, plasticisers, pesticides, toxic chemicals in food, water, air—any and all can disrupt natural balancing mechanisms in our bodies and affect reactions to drugs. Other problems are that drugs: 1) work by interfering with normal biochemistry; 2) mask symptoms so that the underlying causes are often not approached; 3) deplete nutrients that could have been used for repair, detoxification, protection, and healing; and 4) create side effects sooner or later which foster more health issues—then more drugs are prescribed.

US doctors are quick to prescribe drugs and often give little thought to side effects and non-drug alternatives. About 68 million of the 4 billion prescriptions filled in the US each year contain some sort of **error**. More than 50% of all medicines are not correctly prescribed, dispensed, and sold; more than 50% of patients take their drugs incorrectly. A commentary in *JAMA* states there is a paucity of education for doctors on ways to become more careful, evidence-based, effective prescribers. Drug **doses** are set arbitrarily even though there is a wide range of patient responses. These doses are too high for many people. Sometimes there is a lack of certainty that specific drugs actually **work**. For example, blood pressure medications may function in some other way than actually lowering blood pressure; clinical trials show that about 50% of people on placebo will have normal blood pressure within a year. A study published in *The Annals of Internal Medicine* concluded that drugs are often prescribed because the threshold for what constitutes an 'illness' keeps getting lower and lower. In large part this is attributable to the influence of pharmaceutical companies. For example, what was once normal blood pressure is now too high or, if approaching 'high,' is now 'pre-hypertension' for which medication is

prescribed. Or, instead of instructing someone with slightly elevated blood glucose to eat better foods, lose weight, and exercise which could improve or normalize their condition, the person is diagnosed with type 2 diabetes and told they will need medication for life. The study also found that physicians are caught up in an “auditing and reward system”—they are rewarded by drug companies for prescribing more drugs. Then there is the “prescribing cascade” in which drugs are prescribed to help relieve side effects caused by other drugs; then even more drugs are added to relieve new side effects from the recently prescribed drugs.

“Pharmageddon” describes ‘the prospect of a world in which medical care and medicines produce more ill-health than health, and when medical progress does more harm than good.’ For **safer** drug use: 1) Make sure a drug is really needed (non-drug therapies are often preferable; some drugs may cause side effects that are worse than the problem you want to treat). 2) If a drug is indicated, in most cases (especially in older adults), it’s safer to start with a dose that is lower than the usual adult dose. 3) When starting a new drug, see if it’s possible to discontinue another drug. 4) Assume that any new symptom you develop after starting a drug is caused by the drug (report it to your doctor). 5) Look up the drug and find out if the symptom could be an adverse reaction; if so, ask if you really need a drug and, if you do, whether a safer drug could be substituted or a lower dose taken. 6) Find out if the drug is known to interact with other drugs, supplements or foods. 7) Be cautious and skeptical about new drugs. 8) Talk to your doctor about stopping drugs. Above all it’s **essential** that the underlying cause of the problem is discovered and approached rather than trying to mask symptoms. ¹

DRUGS CAN DEplete NUTRIENTS. Drugs can lead to decreased absorption, displacement, or increased excretion of numerous nutrients. The effects of various drugs on nutrients have been only moderately studied. Yet what is already known is startling. Here are a few of the findings:

DRUG	NUTRIENTS DEPLETED
Estrogen/progestin hormones (hormone replacement therapy, contraceptives)	Vitamins B ₁ , B ₂ , B ₃ , B ₆ , B ₁₂ , C; folate; zinc, magnesium, selenium; tyrosine; destroy healthy bacteria in gut
Acid blockers (proton-pump inhibitors, histamine-2 receptor antagonists, antacids)	Vitamin B ₁₂ , folate, iron, zinc, vitamin D, beta-carotene, calcium, magnesium, copper, impaired protein digestion
Corticosteroids (e.g., prednisone, hydrocortisone)	Calcium, magnesium, potassium, copper, zinc, selenium, vitamins C, D, and K.
Antidiabetes drugs (e.g. Metformin)	Vitamins B ₆ , B ₁₂ ; folate, CoQ10, sodium, zinc, magnesium, potassium
Statins	CoQ10
Antihypertensives (beta blockers, calcium-channel blockers, ACE inhibitors, vasodilators)	Vitamin B ₆ , sodium, potassium, CoQ10, zinc, melatonin
Diuretics	Potassium, calcium, magnesium, sodium, zinc, vitamins B ₁ , B ₆ and C
Potassium-sparing diuretics	Folate, iron, vitamin C, zinc
Anticonvulsants	Calcium, vitamin D, folate, biotin, Vitamins B ₁ and B ₁₂ ; L-carnitine, possibly vitamin K
Antibiotics	B vitamins, vitamins C and K, calcium, magnesium, zinc, iron, potassium, disruption of beneficial bacteria
Benzodiazepines (for anxiety, sleep)	Melatonin
SSRI antidepressants	Sodium, folate, melatonin, possibly thyroid hormone levels
Non-steroidal anti-inflammatory drugs (including aspirin)	Folate, iron, potassium, sodium, vitamin C ²

SUPPLEMENTS. There are many reasons to take supplements: 1) Modern commercial agricultural methods leave soil deficient in essential nutrients. Food animals are raised in conditions that leave them unhealthy and nutritionally deficient. 2) Many foods are shipped long distances and stored for lengthy periods, resulting in nutrient depletion. 3) Food processing, cooking and preserving can reduce nutritional content in foods. 4) Many crops are genetically bred to improve visual appeal and crop yields, not nutritional value, which can result in lower nutritional quality. 5) Many medications deplete nutrients. 6) Various illnesses and health conditions as well as particular times in life (pregnancy, aging, etc.) result in increased needs for certain nutrients. 7) Rising

levels of environmental pollution in air, water, and food can cause our bodies to use more nutrients than normal to eliminate toxic substances. 8) Refined, over-processed, toxin-containing nonfoods low or devoid of real nutrition make up a good part of what many people consume, creating nutritional debt. 9) Nonfoods (especially those with residues of pesticides, hormones, or drugs), stress and various medications can lead to poor digestion, making it difficult to extract nutrients from food. 10) Food intolerances further affect absorption.

Research indicates that supplements can be valuable, but certain forms are of little or no value; sometimes they are even detrimental. Yet, in contrast to the 100,000 or more North Americans who die each year due to adverse reactions to drugs, there was not even one death reported in 2008, 2009 and 2010 from taking dietary supplements including herbs. Over a 27-year period, supplements have been alleged to have caused 11 deaths in the US. Intentional and accidental misuse can cause adverse effects, but even if the 11 deaths were caused by supplements, the number of fatalities is glaringly low compared to those caused by drugs. But an analysis of the data revealed there was no 'Relative Contribution to Fatality'—**insufficient** information to make a clear-cut declaration of cause. Assertions that supplements caused the deaths were not evidence-based. ³

Still, some supplements are found to contain potentially harmful substances such as: 1) Detectable mercury, lead, cadmium or arsenic. 2) Prescription drugs; for example, benzodiazepines (anti-anxiety drugs) and fenproporex (converted in the body to an amphetamine). 3) Other ingredients such as carnauba wax, talc, dyes, methylcellulose, sodium benzoate, silicon dioxide, titanium dioxide (classified as possibly carcinogenic to humans) and other artificial and potentially toxic substances. 4) High-fructose corn syrup, artificial sweeteners, hydrogenated oil, modified food starch, and other questionable items. 5) Adulteration of raw materials; for example, commercial grapefruit seed extract, touted as an antimicrobial agent, got this ability from the addition of synthetic industrial disinfectants like triclosan, benzalkonium chloride, benzethonium chloride, parabens. 6) Presently, 60% of ingredients used in US supplements come from China, 13% from Europe, 12% from the US, 10% from Japan, and 5% from other areas. Questions exist about sources, processing, and contaminants.

Minerals in supplements are often from **nonfood** sources. Some may be toxic. A carcinogenic form of chromium (hexavalent chromium), for example, is used in some supplements. Selenium may be listed as sodium selenite or sodium selenate (a byproduct of copper metal refining which is 4 times more lethal than sodium cyanide). Both compounds are classified as dangerous and toxic to the environment. Selenium in real foods is very different from these chemical forms. Sodium selenite/selenate can, for example, cause cancer but selenium in food helps prevent and overcome cancer. You wouldn't want to get chromium by licking your chrome bathroom fixtures, yet this is the same principle as using a nonfood chemical as a nutrient. Also, supplements may not contain the amounts of 'nutrients' that the manufacturers **claim**. Some contain less of a 'nutrient' than claimed on the label; some contain more (sometimes exceeding daily tolerable upper intake levels). What constitutes a 'nutrient' may also differ. Tests on products labeled "**natural**" vitamin E revealed that in some brands, it's 8 tocopherols and tocotriols; for others it's only alpha-tocopherol; for still others, it's synthetic vitamin E. Adverse reactions do occur, usually from high doses of an isolated or synthetic 'nutrient' or inter-actions with drugs. "The potential for toxicity is well documented in the research literature," says Joseph Pizzorno, ND. In 2010, the FDA established new good-manufacturing practices for supplements—they should be produced in a quality manner, be free of contaminants or impurities, and be accurately labeled. But the FDA doesn't have the budget or people to adequately increase inspections or monitor compliance. Some companies, like Standard Process, Inc, had already and continues to meet and surpass these requirements.

There are huge differences between isolated or synthetic chemicals and whole food nutrients. But many people think a vitamin is a vitamin, one form of a mineral is the same as any other. Most health experts agree that whole natural foods are far better for you than refined or fake foods. Why would this change when it comes to supplements of **refined** or **imitation** chemicals? It doesn't. Real food supplements are concentrated whole foods. Their nutrients are **not** isolated, not from nonfood sources, not synthetic. They are highly complex structures that combine a variety of nutrients, enzymes, activators and many other unknown or undiscovered components working together synergistically to enable the collective whole to do its job in your body. Isolated nutrients are never found by themselves in nature—they're dismembered. Synthetic nutrients are human-constructed imitations. When you take isolated or synthetic nutrients regularly, especially 'high potency' types, it's more like taking drugs. They won't benefit your body like high quality food and food-concentrate

supplements. They can cause problems. Studies show that your body treats these isolated and/or synthetic nutrients as foreign substances. Your body tries to flush out as much of these foreign substances as possible, particularly through urine. Any remaining remnant of an isolated nutrient must be combined with other nutrients that are normally part of its complex in food in order to work (though to a lesser degree) in the body. Since your body takes these extra nutrients from its stored supplies, a deficiency in these extra nutrients often results. ⁴

STUDY RESULTS. Some studies report positive results for supplements of isolated and/or synthetic 'nutrients.' As most studies are designed to look for **drug-like** effects, the 'benefit' is often pharmacological, not nutritional. Many studies have disappointing results. A systematic review of 63 randomized controlled trials showed **no** statistically significant benefit for isolated and synthetic 'nutrients' studied. Also, too often study designs have **flaws** and/or the media reports findings incorrectly. There seems to be a campaign to discredit supplements while promoting drugs. For instance, a 2010 study reported that omega-3 fatty acids **don't** benefit cardiovascular health. Participants were given 4 teaspoons daily of margarine with EPA/DHA, ALA (omega-3s), both, or neither. The margarine, referred to as a placebo, contained **trans fats**, known to harm the cardiovascular system. A meta-analysis looked at 67 clinical trials on beta-carotene, vitamin A, vitamin C, vitamin E, or selenium supplements. The researchers found "significantly increased mortality" among people taking vitamin A, beta-carotene, or vitamin E; but they ignored 405 clinical trials because **no** deaths had occurred in those studies, and omitted many other important published papers. Also, the researchers stated that the nutrients "significantly increased mortality"—but risk ratios of 1.04 (for vitamin E) and 1.07 (for beta-carotene) are not significant—they're essentially **null** findings. A 2011 study concluded that supplements increase the mortality rate in older women. Actual death rates were not reported, only statistically adjusted death rates of supplement users compared to non-users. Since supplement-takers were in a healthier category for each adjustment area, the researchers **over-adjusted** the supplement-users death rates because of their overall better health, skewing the results. When the data were adjusted only for age and caloric intake, there was **no** statistically significant difference in death rate between the two groups. A study linked vitamin E use to increased risk of prostate cancer. Not only was synthetic alpha tocopherol used, but the study was **not** designed to assess the relationship between vitamin E and prostate cancer. In this study, there were 1.6 cases of prostate cancer per 1,000 person-years—hardly a "significantly increased risk of prostate cancer."

Some studies **legitimately** find problems with isolated or synthetic 'nutrients.' Beta-carotene by itself brings no benefit in lung-cancer prevention, but foods containing carotenes do. Isolated or synthetic vitamin E does not benefit cardiovascular health though food sources do. Vitamin B₁₂ on its own doesn't help prevent or slow the progression of Alzheimer's disease, though people with Alzheimer's have low B₁₂ levels. Isolated and synthetic vitamins E (alpha-tocopherol) and C (ascorbic acid) don't benefit cancer, cardiovascular disease, or biomarkers linked to Alzheimer's. Lycopene, one carotenoid, doesn't help prostate cancer, yet foods containing lycopene are preventive. Supplementation with isolated nonfood calcium does not show beneficial effects on serum lipids or body composition (fat/lean mass) even though calcium-containing foods are helpful. Two analyses of past studies found that taking large doses of calcium supplements slightly increases risk of heart attack and stroke. Inorganic, isolated calcium, when not bound to its natural co-factors found in food, "does not reproduce the same metabolic effects as calcium in food," says Sabine Rohrmann, MD. High doses of isolated calcium (especially if taken without food) increase the risk of certain kinds of kidney stones. But foods naturally rich in calcium protect against kidney stones. **Any** nutrient taken by itself is not only unnatural, it's unbalanced. Magnesium, for example, is one calcium companion. Magnesium helps prevent and alleviate some effects of heart attacks. Calcium without magnesium creates a relative deficit of bodily magnesium. Too much of **any** single separated nutrient creates relative deficits of other nutrients, notably nutrients that normally appear with it in food. But scientists try to identify 'the' active ingredient in a food that works in a certain manner in the body, seeking a drug effect. Supplements using a broccoli **extract**—separating out "key phytonutrients" like erucin and sulforaphane don't offer the same benefits as the vegetables themselves. Not only are some ingredients missing, but the synergy is lost. It's like hearing only 1 note of 1 musical instrument in a symphony. ⁵

SUPPLEMENTS ARE NOT ALL CREATED EQUAL. A lot of evidence links chronic diseases to a lack of nutrients. Sadly, as explained by Johns Hopkins University scientists: "Nutritional research has adopted a reductionist approach that emphasizes the role of individual nutrients in physiologic function or disease process. In view of the complex pathological processes of chronic disease, the idea of using a single nutrient

or a few nutrients to modify disease risk carries considerable optimism.” One or a few isolated nutrients **cannot** reverse any disease, illness, or condition. Unfortunately, the 40 or so **isolated** nutrients that scientists study—and most supplement companies pack into pills or powders—are only a tiny fraction of the array of organic compounds found in food. A nutrient is not a single compound, but a family of compounds. Our bodies need all these complementary, interdependent components together to properly use them. When you get vitamin C in a piece of fruit, for instance, the ascorbic acid (called ‘vitamin C’) comes with a lot of other ingredients—flavonoids, rutin, trace minerals, and more. The ascorbic acid antioxidant protects other **functional** parts of the vitamin C complex from premature oxidation or breakdown. We need the whole complex for real nutritional benefits. Richard Lee, MD, says that when synthetic substances or over-processed substances from natural sources are made into supplements, he treats them as drugs. These substances are in different concentrations than they would naturally be in food, so he reasons that different effects will result. Most ‘natural’ supplements are made by drastically modifying natural substances, isolating certain ingredients, and using processes that change the biological activity. The end result is far from a nutrient-rich food. It’s even worse when the ‘nutrient’ part is synthesized—artificially imitated. Studies show that synthetic forms of beta-carotene, alpha-tocopherol and **other** nutrient imitations have different effects than natural forms and can have adverse effects. A 2012 study showed that high doses of alpha-tocopherol don’t help prevent cancer whereas consuming foods high in vitamin E complex are protective. Imitated flavonoids can interfere with detoxification phases, adversely affect the thyroid, and have other effects that don’t occur when flavonoids naturally occur in food. Oncologist Mitchell L Gaynor, MD, believes “that eating the whole food is much better than taking synthetic vitamins.”

That a person does not experience **immediate** symptoms from an isolated or synthetic ‘nutrient’ doesn’t mean the substance is not having an important negative effect. It can alter the metabolism of or interfere with the effectiveness of other nutrients, create deficiencies, and eventually produce symptoms. Inappropriate information can be sent to enzymes that catalyze essential actions in the body. Each of us is unique in our biochemical state and molecular characteristics, so we have individual requirements. Nutritional needs also vary according to our age, gender, stress level, genetic profile, lifestyle, health status and presence of any illness. Each of us has a higher or lower requirement for specific nutrients than do other people. It’s been suggested that supplements should be tailored to a patient’s individual needs, but needs change. Real foods and food-concentrate supplements offer selective absorption. This means a person’s body absorbs more of nutrients than needed in larger amounts and absorbs less of nutrients needed in smaller amounts. It’s extremely rare that anyone would be deficient in one nutrient; essentially all tissues in the body need virtually all nutrients. But when one or more are present in suboptimal concentration, tissue function will be impaired to some extent. Dr Robert P Heaney writes that a disease from a nutrient deficiency “reflects simply the functional breakdown of the most severely affected body system... Effects in other body systems are often not explicitly perceptible (though any damage due to the deficiency continues to accumulate silently).”

Here are a few examples of benefits from **real** food-concentrate supplements. Various encapsulated vegetable and fruit juice powders: 1) improved immune function, reduced cellular stress and days lost at work for men in stressful jobs; 2) improved outcomes of periodontal disease; 3) decreased total cholesterol and oxidative indicators plus improved other detrimental indicators in heavy smokers; 4) reduced common cold symptoms and duration of symptoms; 5) reduced serum homocysteine and markers of protein, lipid and DNA oxidation; improved markers of immunity, inflammation and endothelial function; 6) improved the level of agitation, anxiety, and delusion in Alzheimer’s patients; 7) reduced blood pressure and increased flow-mediated vasodilation in men with metabolic syndrome; 8) decreased lipid peroxidation and reduced elevated blood pressure; 9) supported proper blood building, immune system function, detoxification, repair processes; aided factors that may help prevent cardiovascular disease, cancer, problems with blood sugar regulation. 10) Cranberry concentrate lowered frequency of urinary tract ‘infections.’ 11) A high-fiber, fruit-based supplement bar raised glutathione, increased HDL (so-called “good”) cholesterol, lowered homocysteine. 12) Rose hips, rich in vitamin C complex, lowered elevated cholesterol, potentially improved diabetic conditions and osteoarthritis. 13) Camu-camu, also rich in vitamin C complex, supported immune function, aided inflammation and repair processes, had antidepressant effects, helped lower blood pressure, supported blood vessels. 14) Sea vegetables, like kelp, rich in vitamins and numerous minerals including iodine, had inflammation-resolving, immune-system, and blood pressure-lowering benefits. 15) **Beet** root and greens contain healthful nitrate that is converted by the body into nitric oxide (NO) which sends various signals to every bodily cell. NO relaxes

smooth muscles in blood vessel walls, causing them to relax or dilate, thus increasing blood flow. This can help prevent angina and heart attacks, lower blood pressure, improve erectile dysfunction in men, increase blood flow to the brain (reducing risk or progression of dementia), and increase exercise capacity (by improving blood flow and reducing the amount of oxygen muscles need during activity). Other components, like betacyanin, have cancer-protective effects. Research links beets with protection against heart disease, reduced oxidation of LDL cholesterol, inhibition of blood clots, reduction in triglycerides, lowered homocysteine levels and other bio-markers of inflammation. Beets aid detoxification through the liver and help relieve the kidneys of stress.⁶

To support proper dilation, strength and flexibility of blood vessels and to encourage healthy circulation, the following can be considered:

Just Before Two Meals:

2 Betafood (chew), NO production

2 Cataplex C (chew), vitamin C complex

1 Cyruta-Plus (chew), flavonoids, rutin

Midway Through Two Meals:

2 Chlorophyll Complex, E complex, fatty acids

Midway Through One Meal:

1 Cayenne Pepper, circulation aid

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