

Two years ago, as I lay in a hospital bed recovering from a semi-serious operation, my dear friend Joan gave me ample supplies of vitamin and mineral supplements: A, B-complexes, C, D, zinc, dolomite, etc. When my physician spied the bottles, we told him what they were. A day later, a new tablet appeared in my med-cup. It was round, orange, 2½ millimeters in diameter, about one-fourth the size of an M & M. I was told it was my "vitamin supplement."

I keep that pill in a glass jar to remind myself that despite evidence of wider public consciousness about nutrition — biochemists on talk shows, mushrooming health-food stores, label-readers in supermarkets — those who really hold our life strings, the medical industry and the federal government, are still far behind in testing and approving amounts of key nutrients in our diet.

Most likely, neither that tablet nor the myriad of supplements brought by my well-meaning friend were *exactly* what I needed. Researchers are now learning that individual metabolism and lifestyle have more to do with one's nutritional needs than standard formulas. Among the factors affecting what nutrients a person needs are diet, stress, exercise, job, allergies, environment, and pollutants, and use of coffee, alcohol, cigarettes, and other drugs.

Individual Nutrition

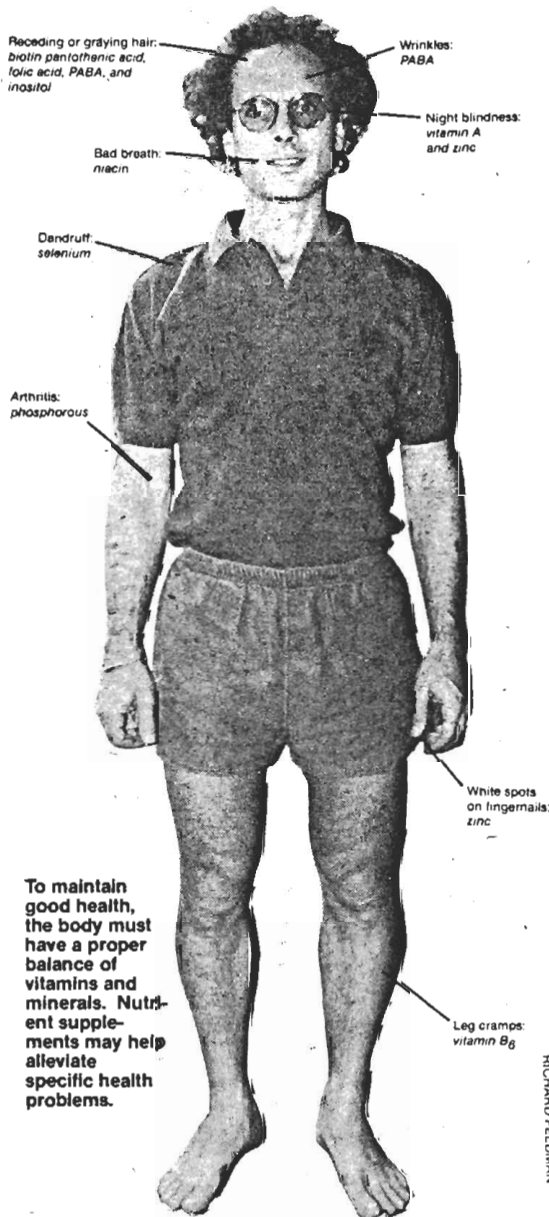
This theory of biochemical individuality — or how to discover what nutrients are necessary for an individual's optimal health — was pioneered in 1962 by Roger Williams, discoverer of B₅ (pantothenic acid), in *Nutrition in a Nutshell*. He believed his chief enemy was public ignorance of nutrition, so he sought to educate people out of their white-bread, red-meat, and boiled-vegetable stupor. His supplement list was painfully modest by today's standards — 100 milligrams of vitamin C, 2 milligrams of B₁ — but he wisely added, "If this book should be revised a few years hence, it is probable that some changes would be made."

Williams discoursed on the anti-infective capabilities of vitamin C a full eight years before Linus Pauling's *Vitamin C and the Common Cold*, and he warned against the single-vitamin approach, explaining — for example — that cataracts aren't always the result of riboflavin deficiency alone: Other vitamins and amino acids are also involved. Though this first book may seem primitive in 1983, it laid the groundwork for more sophisticated theories on how individuals react to supplementation, just now being explored.

Contemporary readers who refer to *Nutrition in a Nutshell* may be shocked at some of the attitudes expressed there — for instance, Williams' castigation of "nature enthusiasts" who would ban DDT. "The extensive corps of experts who have charge of the control and use of pesticides are acquainted with all the problems," he argues. "... they make a sincere effort to guard health, and I would rather trust the control to their hands than I would to the inexperienced and uninformed individuals who often become very vocal on the subject."

Williams provided the springboard for theories explored in three more recent books — *Earl Mindell's Vitamin Bible* (1979), *Vitamins and You* (1979) by Robert J. Benowicz, and *Your Personal Vitamin Profile* (1982) by Michael Colgan. Benowicz's book is thorough (to the point of tedium) in presenting a history of vitamins, arguing their case, and lambasting the federal Food and Drug Administration

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NUTRIENTS

Charting Your Personal Supplement Needs • by Peter Bates

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(FDA) and its recommended daily allowances (RDAs), as well as offering profiles of each major vitamin and helping readers determine their needs.

The Need for Supplements

All three books argue persuasively for a personal supplementation regimen. They inform us that standard appraisals of vitamins and minerals in foods are unreliable because we have no way of knowing the effects of soil quality, storage, and transportation on vitamin potency. Also the processing, freezing, canning, and cooking of foods lays waste to some vitamins. And in our bodies, much of the touted iron in spinach and carotene in carrots is not absorbed.

All three authors tell us that vitamins work best cooperatively, that they in fact must be taken in balanced concentrations. If one link of the chain is missing or deficient — one tiny B vitamin — then the effect is lost (or substantially weakened). Says Colgan: "Loading up on C before a competition may benefit oxygen metabolism . . . but other parts of the energy-production cycle require at least the entire vitamin B-complex and probably A, D, and E in order to function adequately. Without a considerable quantity of these complementary vitamins, the extra C may be unusable." Mindell tells us that vitamin E not only enhances the activity of vitamin A, but it is synergistic with selenium. "This means," he says, "that the two together are stronger than the sum of the equal parts."

Benowicz's method of determining individual nutritional needs is personal experimentation. He offers a chart of optimal personal allowances (OPAs), categorized by age and sex, with dosage ranges to work with. For example, his vitamin C recommendation for a 36-year-old male is 1 to 3 grams. He notes that it's nearly impossible to tell how a lifetime of junk-food hinging or cocktail swilling might have changed our vitamin needs, and mentions the variables of body build, personal medical history, and day-by-day changes due to tension, illness, drug use, and exposure to pollutants. But it would be more helpful if he told us how much each of these factors changes one's needs within the suggested ranges.

Instead, Benowicz recommends beginning supplementation "in concentrations designed to achieve rapid saturation without risking toxification. . . . A gradual reduction in intake should follow." He suggests taking mid-range vitamin amounts for at least four to six weeks, then evaluating how you feel (energy level, resistance to minor illnesses, stamina, etc.), and, after three or four months, gradually reducing supplementation "until you find the maintenance levels appropriate for your unique body chemistry." It's a highly subjective approach.

Variations on a Theme

Michael Colgan offers a faster and more specific method for discovering your nutritional needs: a basic vitamin and mineral regimen, plus a list of 34 variables and what to do about each. Colgan concocted his recommendations from scores of tests given to athletes in New Zealand and California. (We never hear how the other two arrived at their recommended dosages.) An example: If you live near an urban area, increase your vitamin A by 2,000 international units (IU), your vitamin C by a gram, bioflavonoids by 100 milligrams, zinc 10 milligrams, vitamin E 100 IU, and selenium 50 micrograms. If your hair is prematurely graying or falling out excessively, increase vitamin B₅ 50 mil-

ligrams; B₆ 10 milligrams; folic acid 200 micrograms; biotin 300 micrograms; inositol 100 milligrams; PABA 100 milligrams; zinc 200 milligrams; and eat eggs, onions, and garlic for sulfur. Other variables include smoking, alcohol, processed carbohydrates, salt, skin conditions, even sexual dysfunction. Both Colgan and Mindell talk about diet as a major factor in their programs (Benowicz pays lip service to it at best).

When dealing with minerals, Benowicz simply quotes the U.S. RDA range and tells us to wing it. If you suspect a mineral imbalance (i.e., if you're not feeling well), he recommends getting a hair analysis. Colgan tells us how to adjust supplementation if a hair or tissue test shows you have elevated levels of cadmium, mercury, lead, aluminum, arsenic, etc., then you must adjust your supplements accordingly. Contrary to what you might think, an above-normal copper concentration doesn't mean you should consume less copper, but rather "20 milligrams of zinc, 20 milligrams of magnesium, 50 micrograms of molybdenum, and 50 micrograms of selenium," Colgan says. Such exactitude inspires confidence, whether it's correct or not.

Vitamin Verses

Pharmacist Earl Mindell's *Vitamin Bible* (1979) is a curious book, divided as it is into 241 separate discussions of vitamins, scored like verse notations in the King James version. His recommended regimen, verses 102 to 129, begins with a nutrition starter program (NSP) of 1 gram vitamin C, "high-potency multiple vitamins with chelated minerals [amounts unspecified]" and "high-potency chelated multiple minerals, one of each with breakfast and dinner [also unspecified]." To this he adds recommendations depending on age and sex, most in similarly vague amounts, like "stress-B-complex" and "nine capsules of lecithin." To be fair, he does list "average" or "typical" dosages of each nutrient in an earlier section.

For a lengthy list of diseases, ailments, and injuries, from bad breath to bee stings to diabetes to venereal disease, his suggestions are much more exact.

Mindell also recommends adjustments by occupation, like "truck driver," "dancer," "actor," "executive," and "excessive television watcher." Readers whose jobs aren't represented will have to extrapolate. For example, if you are a petty entrepreneur — risking all to become rich, then situate yourself somewhere between "gambler" and "executive." The list is quite incomplete, but Mindell's bases for analyzing each group's needs seem sound, and his folksy approach can be quite entertaining. Verse 118, for instance, advises high-rollers: "If you're a gambler, I don't have to tell you about your stress, sleep, and dietary needs. I'm sure you're aware that all three are higher than average. What you might not realize, though, is that you could be in need of vitamin-D supplementation because of lack of sunlight. For best performance at any table, I suggest . . ." Humor aside, I was particularly disappointed he didn't include office workers slaving under ravenous, vitamin-C-sapping fluorescent lights.

Too Many Vitamins?

As for taking too high a level of vitamins, Colgan tells us that toxic doses of fat-soluble vitamins such as A, D, and E can build up in the liver, unlike water-soluble vitamins, of which excesses are excreted. Benowicz argues that public fears of vitamin overdose

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(hypervitaminosis) have been created by the FDA, and that toxic doses are difficult to achieve. Mindell seems most thorough on this count, including a "toxicity" blurb in each of his 41 nutrient profiles.

A Personal Test

By now it is evident that these three books offer wide variants of our personal vitamin regimens. I tried all three, and if I were going by their results alone, I'd be hopelessly confused: My results — vitamin C: 3 grams (Colgan), 1 to 3 grams (Benowicz), 2 grams (Mindell); vitamin A: 7,000 IU (Colgan), 5,000 to 10,000 IU (Benowicz), unspecified, part of a multivitamin (Mindell); vitamin B₆: 80 milligrams (Colgan), 100 to 200 milligrams (Benowicz), unspecified (Mindell); folic acid: 350 micrograms (Colgan), 500 to 1,000 micrograms (Benowicz), unspecified (Mindell).

Colgan and Benowicz both warn that most vitamins can't possibly be "natural"; all rose-hip vitamin C, for instance, is mostly synthetic with sprinklings of powdered rose hips to keep the FDA happy. Benowicz maintains that in order to get enough vitamin C from rose hips alone, the tablet would have to be "large as a hen's egg," and Colgan says "football-sized." Similarly, obtaining all of your daily niacin from natural yeast would mean taking a tablet weighing more than a pound.

So who are we to believe? My bias is toward Colgan, not only because his approach throughout strikes me as more scientific than the other two, involving more variables more accurately measured, but because he takes a more holistic route. Like his predecessor Roger Williams, his research into nutrition does not merely mention exercise and diet, but devotes whole chapters to it. His approach to preventing cardiovascular disease not only recommends the use of choline and inositol (the "contested vitamins" in Benowicz's opinion), but also relaxation training, bio-feedback, smoking avoidance, and distilled water.

None of the authors takes into account world politics' role in nutrition, however. Such a truly holistic approach would make us realize that before widespread nutrition gains are made in both the developed and underdeveloped countries, vast democratic reforms must take place within or instead of the existing structures. For no matter how much we learn about individual nutritional needs, many people in the world are too poor, or have too little control over agriculture and food distribution in their countries, to take advantage of the new knowledge.

PETER BATES is a Boston-based free-lance writer and photographer.

To Learn More

Nutrition in a Nutshell by Roger Williams; Dolphin Books, Doubleday and Company, Inc., 57 Main Street, Port Washington, New York 11050; 1979; paperback \$2.50.

Vitamin Bible by Earl Mindell; Warner Books, Inc., 75 Rockefeller Plaza, New York, NY 10019; 1979; paperback \$3.95.

Vitamins and You by Robert Benowicz; Berkley Books, 200 Madison Avenue, New York, NY 10016; 1979; paperback \$2.95.

Your Personal Vitamin Profile by Dr. Michael Colgan; William Morrow and Company, Inc., 105 Madison Avenue, New York, NY 10016; 1982; hardcover \$14.95, paperback \$7.95.

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