Science takes time. Lavine discussed one explanation for the lack of benefit and the surprising increased risk of cancer associated with the use of β-carotene in some past clinical trials. That is, the supplements used contained isomers of β-carotene that differ from those in food. Additional research is needed to evaluate this and other explanations for these results before we can form broad recommendations about the use of β-carotene in supplements. Similarly, research involving dietary xanthophylls (lutein and zeaxanthin) is in the early stages. More reliable answers regarding possible benefits of lutein supplements will require a large body of evidence from experimental animal studies, analytic epidemiology, and clinical trials, as discussed previously (1).

Given this state of affairs, Lavine wondered whether, in the meantime, we can recommend that “a dark, leafy green vegetable a day may keep the ophthalmologist away” and limit recommending supplements to “patients who are unable or unwilling to change their dietary lifestyles, or for those situations in which the desired level of intake of a given nutrient cannot be readily achieved by dietary means.” I agree that eating more green vegetables cannot hurt. However, it is premature to conclude that supplements containing lutein should be recommended for patients who do not eat adequate amounts of lutein. First, we do not know what amounts are adequate. Second, the “just in case” approach assumes clear benefit and no cost or risk. Most people would agree that there is sound rationale for the recommendations to use multivitamins containing essential nutrients when diet may be markedly compromised. There is broad scientific evidence for the need for essential vitamins and minerals. However, this rationale cannot be extended to other dietary components. At this time, we have insufficient information about potential benefits and about the amounts that are safe in the long term. We also have incomplete information about the chemical forms found in foods for use as a guideline in designing supplements.

Furthermore, dietary supplements can be costly. This is of particular concern for older adults with a limited income. Older people often are a target for the marketing of these nutriceuticals because of their interest in ways to influence health and disability in the face of declining health.

Many people, particularly those with severe chronic diseases, might choose to use food supplements before adequate scientific information is available about their effectiveness and safety. Physicians are in a unique position to be able to help patients understand the relative strengths and weaknesses of the scientific information available to guide these personal choices. Consider the value of communicating the uncertainty of scientific evidence regarding the value of pills containing substances that are found in foods. This information would leave some people more comfortable with the choice to spend limited income on things that contribute to quality lives—books, music, walking shoes, or enjoyable meals.

Certainly, continued research aimed at finding relatively harmless food chemicals to package into pills that could promise to inexpensively and safely reduce premature death and disability is worthwhile. This hope drives the intensity of research to identify such universally beneficial substances. However, in general, we must insist on a strong body of scientific evidence before making recommendations to patients or to the public in general. For lutein, the evidence, although promising, is still not in.

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REFERENCE

Use of the term vegetarian

Dear Sir:

After reading the proceedings of the Third International Congress on Vegetarian Nutrition in the September 1999 supplement to the Journal (1), I came to the following conclusion: the term vegetarian ought to be removed from the scientific literature. It has many nonnutritional connotations and provides too little specificity about one’s dietary pattern.

In the 1940s and 1950s, avoidance of meat was often assumed to be due to religious belief; such eating habits made no other sense in those days. In the 1960s and 1970s, a person who did not eat meat was assumed to be part of the antiestablishment movement and to be using diet to make a political statement. Since the 1980s, avoiding meat has been more likely to be considered part of a healthy lifestyle, although motives unrelated to health are often suspected. As described by Johnston and Sabaté (2), through the years vegetarians have been questioned, ridiculed, and considered to be eccentric. Although an increasing number of people are now avoiding meat, the label vegetarian carries with it various, and varying, connotations about beliefs and practices that are unrelated to diet and health and that appear to be based in part on societal norms and expectations.

From a scientific standpoint, nutritional investigators too often use the term vegetarian as though it describes a specific dietary pattern. Even dictionaries do not provide consistency in their definitions. Dorland’s Medical Dictionary defines vegetarians as those who eat a diet of exclusively vegetable origin, whereas The American Heritage Dictionary states that such persons sometimes include dairy products; Merriam-Webster indicates that animal products are sometimes included. Chefs know full well the lack of specificity of the term when they try to respond to a request for a vegetarian meal. There are even odds that the meal will include fish or cheese, and that it will include fruit for dessert (apparently, vegetarians are assumed to avoid added sugars as well). Among friends and colleagues who consider themselves vegetarians, I have observed many variations on the theme. A few are vegans who eat primarily fruit, vegetables, and whole grains with no added fat, sugar, or honey; yet another eats little fruit and vegetables but large amounts of refined starches, fat, and sugar. It is common for some self-proclaimed vegetarians to eat chicken and for others to avoid chicken and eat fish or dairy products. In an attempt to add more specificity in the scientific literature, various qualifying terms have been used, such as pescovegetarian and lactoovegetarian. For one person I know who considers himself a vegetarian, an appropriate label might be lactoovopescopulo-steak-only-when-I-eat-out vegetarian. In the proceedings of the Third International Congress on

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Vegetarian Nutrition I found reference to 2 new terms that can be added to the list of nonspecific terminology: semivegetarian and near-vegetarian.

In most reports in the proceedings, the authors avoided reference to the term vegetarian and addressed the health effects of specific foods or food groups, such as fruit, vegetables, whole grains, legumes, and nuts. Among the original research papers, when reference was made to a vegetarian diet, such a diet was usually defined in terms of the specific foods selected so that the reader could discern what the subjects were actually eating. By contrast, I found the description of a vegetarian diet particularly interesting in one of the reports that described an intervention trial comparing the effects of an unrestricted omnivorous diet with a vegetarian diet on symptoms of rheumatoid arthritis (3). The “vegetarian diet” was characterized by its exclusion of animal products—as well as of gluten, refined sugar, citrus fruit, salt, alcohol, and caffeinated beverages. Among the review articles, some of the authors simply dichotomized dietary patterns into vegetarian and nonvegetarian. Frankly, I do not think I could describe a typical vegetarian or nonvegetarian diet with enough specificity to be able to even guess about its nutritional adequacy or health effects.

People choose different eating patterns for different reasons. As nutrition scientists and clinicians, we aim to draw conclusions and make recommendations based on the specific foods a person eats. The panel summary paper of Dwyer (4) used the term plant-based diet to describe the general eating pattern of the increasing number of persons who prefer to decrease their consumption of animal foods and to increase their consumption of plant foods. This term still lacks the specificity needed for scientific analysis. However, if we need a descriptive term to broadly categorize this growing dietary pattern, plant-based diet is preferable to vegetarian diet. At least it carries less non-nutritional baggage.

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REFERENCES

Reply to R Weinsier

Dear Sir:

We agree with Weinsier regarding the use of the term vegetarian. In fact, we raised the very same issue in another forum some 5 y ago (J Sabaté, unpublished observations, 1994). We proposed then that the criteria for defining a vegetarian diet place more emphasis on the presence of vegetables, fruit, grains, and other plant foods and less on the absence of flesh products from the diet. We suggested that the cutoff points between what have been called vegetarian, semivegetarian, or nonvegetarian diets not be based solely on the frequency of meat consumption, as is usually the case in research studies. Further, we suggested that persons who do not have ample daily consumption of fruits, vegetables, and whole-grain cereals be considered nonvegarians, regardless of their consumption of meat and other animal products. Such classification is intended to give credit to the potential health effects of plant foods rather than to emphasize only the effects of meat.

As noted by Willett (1) in the keynote address at the Third International Congress on Vegetarian Nutrition, there has been a shift in thinking in the past decade regarding vegetarian diets. In the past, the focus was on foods that were excluded from the diet, particularly meat, and the attendant health effects. More recently, attention has focused on the benefits of some foods, such as fruit and vegetables, that may be found in larger quantities in vegetarian diets. The point has been well made that vegetarian diets may or may not be healthful (1). Further, depending on food choices, an omnivorous diet may prove to be equally healthful (2).

Problems in both terminology and complexity are encountered in studies designed to ferret out relations between diet and health. The dietary intake patterns of persons calling themselves vegetarians are as diverse as are the patterns of persons who are classified as omnivores. Very little can be correctly assumed about nutrient intake from the use of either term or from the various other terms that have been used in an attempt to be more descriptive of particular dietary patterns. It has been repeatedly stated that to evaluate the nutritional adequacy of a vegetarian diet, a detailed dietary intake record must be obtained (3). In addition, other lifestyle-related practices need to be assessed for their relevance to nutritional status (4).

Scientists can attempt to evaluate the health effects of nutrients, foods, or dietary patterns. As we progress from a single nutrient to overall dietary patterns, analytic complexity increases greatly. Describing the effect of a single nutrient is much less challenging than describing the effects of the mixture of foods consumed in often varying amounts as part of any diet. In addition, persons who follow distinct dietary patterns often have other lifestyle characteristics that have various health effects that may confound the effects due to diet. This challenge is not unique to researchers studying vegetarian diets but has been encountered in studies of the now well-publicized Mediterranean diet (5). The inclusion of philosophic considerations associated with dietary patterns adds another layer of obstacles to be overcome in understanding the true relations of dietary intake to health outcomes.

Another problem encountered with some frequency is the attribution of outcomes from a diet that has been classified as vegetarian to another diet for which the same terminology is used but that is quite different in the foods that are included and excluded. As a result, nutritional problems encountered in persons who follow a particular vegetarian diet have been attributed to all persons who call themselves vegetarians. Conversely, the beneficial effects associated with some vegetarian dietary practices may be attributed inappropriately to all so-called vegetarians.

Despite the fact that this issue of terminology was raised several years ago, the reality is that there is a tradition among both.