Optimizing Metabolism
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Preventing Age-Related Macular Degeneration with Leafy Greens

Introduction

"Take two cups of kale and call me in the morning" may be among the emerging clinical suggestions to prevent a leading cause of blindness in adults: age-related macular degeneration (AMD). Like diabetes, the main topic in this issue of Townsend Letter, macular degeneration involves the breakdown of nerve tissue. Nutritional recommendations for diabetes and macular degeneration are also similar.

No vitamin supplement or medicine has been shown to stall progression of AMD better than good old green leafy vegetables. That said, many of our patients have medically related barriers to meeting their bodies' need for greens. This article centers on how we can help patients get the nutrients they need from greens.

Greens Should Be Eaten with Dietary Fat ... and Don’t Forget about Herbs.

Patients tell me how they eat a salad with fat-free dressing as their lunch or have a green drink as a snack. Indeed, salad and juiced green vegetables have healthful properties. But did you ever wonder why raw salads and veggie juices aren’t part of the culinary tradition of most cultures? The reason may be an important detail pertaining to your health.

Traditional diets all around the world include dark green leafy vegetables such as kale, bok choy, turnip greens, mustard greens, collard greens, chicory, Swiss chard, dark green lettuce, and spinach. Greens are usually prepared in one of a few ways across cultures. They are chopped, lightly cooked, and sautéed in a minimally processed oil; added to soups and stews; or prepared in vinegar.

As it turns out, digesting the nutrients in green vegetables is best done by a combination of heating, chopping, and oil extraction. Your tax dollars have been spent on studying this important process: the US Department of Agriculture has researched how fat-soluble nutrients can be best absorbed. Green leafy vegetables are rich in vitamin K, carotenoids, and flavonoids. These are all fat-soluble nutrients, which means they that need to be eaten with some form of fat to be absorbed. This is very likely one reason green leafy vegetables are traditionally eaten with a dietary fat.

Similar reasoning applies to other vegetables. I’ve watched many nutritionists roll their eyes when they see ketchup listed as a vegetable. Indeed, it does leave a lot to be desired. But the decision rests on often-overlooked science. Ketchup topping a fatty food may net more lycopene, a fat-soluble nutrient that makes tomatoes red, than an anemic-looking, underripe hothouse tomato sliced on lettuce and eaten with fat-free salad dressing.

Herbs are to green leafy vegetables what ketchup is to tomatoes. We don’t usually think of oregano, rosemary, mint, and cilantro as green leafy vegetables; and it would certainly take a lot of dashes from the shaker to make one vegetable serving. That said, herbs are dried and concentrated greens that retain their fat-soluble vitamins, which are well absorbed.

Herbs may very well be considered eye nutrients in a bottle. However, I am less confident that science is able to put eye nutrients in a capsule. Vitamin supplements
can and do protect eye health and demonstrate delay in progression of eye disease. However the only head to head, toe to toe, test of vitamins verses leafy greens conducted some decades ago proved Mother Nature’s greenery the winner.

So what is in greens that the eyes depend on? One fat-soluble nutrient in the carotenoid family is lutein. It is one of the many important nutrients for eye health and has been isolated as a supplement, but continues to be best obtained from dietary sources.

Patients Who Carry Extra Body Weight May Need to Eat More Greens.

Adipose tissue (body fat) stores fat-soluble nutrients such as vitamin D and carotenoids. However, this does not mean that people with excess adipose tissue have sufficient fat-soluble vitamins. On the contrary, obesity is a risk factor for inadequate blood levels of vitamin D and carotenoids. Vitamin D initiated by ultraviolet light exposure in the skin remains stored in body fat instead of being activated by the liver and kidneys. Similarly carotenoids are concentrated in adipose tissue and not released into the circulation or transported to the eyes.

An observation meriting further study is that in someone undergoing rapid weight loss, such as during the 6 months following bariatric surgery, the blood vitamin D levels (and possibly the carotenoid levels also) increase.

A History of Kidney Stones Isn’t a Reason to Skip Greens.

I’ve heard another medical myth I’d like to reframe: “I don’t eat spinach because I had a kidney stone.” The rationale for this is as follows: of the many types of stones, calcium oxalate stones are the most common. Spinach is high in oxalate; therefore the patient should avoid spinach.

Evidence-based medicine suggests a different approach. First, the patient’s stone would be analyzed to see if it comprises calcium oxalate. If the stone comprises calcium oxalate and urinalysis demonstrates hyperoxaluria, there may be some basis to consider limiting oxalate intake. But even then, dietary studies have not been able to corroborate significant benefit from avoiding oxalate. On the other hand, there are several clinical studies that support other dietary modifications:

- Increase fluid intake to 25,000 ml per 24 hours, mostly as water.
- Maintain a healthful weight and monitor for insulin resistance.
- Screen for hyperparathyroidism, especially related to inadequate vitamin D.
- Optimize vitamin D, since low levels decrease calcium absorption.
- Consider supplementing with magnesium.

- Avoid excess protein intake.
- Use caution with vitamin C supplementation.

Why not implement the evidence-based recommendations first and keep eating your spinach, Popeye?

Warfarin Is Not a Reason to Avoid Greens.

The “patient counseling” section of the drug label for warfarin reads as follows: “Inform that vitamin K in diet may affect medication. Instruct to eat normal balanced diet; avoid drastic changes in diet such as eating large amounts of leafy green vegetables.”

Warfarin is among the most commonly prescribed medications, and risk of hemorrhage is significant. Adhering to the label recommendation is therefore important. The label does not recommend avoiding leafy green vegetables. Yet, I hear from patients with concerning frequency that they do not eat green leafy vegetables because they are on a blood-thinner. Misreading the label prevents the body from getting the nutrients it needs from a normal balanced diet, which includes green leafy vegetables. Avoiding leafy green vegetables does not make warfarin safer. In addition to increasing the risk of a growing number of chronic diseases, avoiding greens can make warfarin more difficult to dose. This may be because people who avoid greens still use the oregano shaker from time to time, providing them with vitamin K not recorded in the diet log.

Fat Malabsorption Increases the Body’s Need for Greens.

Some medical conditions such as inflammatory bowel disease, surgeries such as gastric bypass surgery, medications such as orlistat, and fake foods such as Olestra reduce the ability of the intestines to absorb fat-soluble nutrients. Taking a vitamin supplement with vitamins A, D, E, and K does not cover all the bases. The carotenoids essential for eye health are also malabsorbed. I believe that patients should be informed of the consequences of malabsorption and reminded to eat extra greens.

Summary


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