



MICRONUTRIENTS

VITAMINS,
MINERALS
& MORE

INTRODUCTION
& VITAMIN A

DR PAUL APPROVED - VOLUME 1



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Check Vitamin Levels At Home:
<https://trylgc.com/paulthomasvitamin>

INTRODUCTION

It has become clear that vitamins, minerals and other micronutrients are required for health and wellness, and are needed at higher levels than those listed as RDA (Recommended Daily Allowance) for the prevention of diseases.

It is possible (though rare) to achieve optimal micronutrient status through diet (food) alone. Hippocrates said over 2000 years ago, “leave your drugs in the chemist’s pot if you can heal the patient with food”. I do believe we will achieve the best health by avoiding toxins (pesticides, herbicides, GMO food, for some - wheat or gluten, etc.) and by getting as many of our nutrients from our diet, with lots of colorful fruits and vegetables, seeds, nuts and legumes.



If possible, eat organic fresh food (or frozen – not canned), and drink and cook with filtered water. You either get adequate sunshine, or you need to take a vitamin D supplement. If you don’t have access to lots of fresh fruits and vegetables, you likely would benefit by taking some nutritional supplements.

How do we know if we are getting all the vitamins, minerals and other micronutrients we need?

Is your life or that of your child, filled with hope, energy and enthusiasm?

The absence of illness or disease is just one clue, but too often the results of poor nutrition may show up decades later in the form of heart disease, cancer, neurodegenerative disorders, autoimmune disorders or just plain fatigue, low energy or less than optimal brain function. Don't get me wrong here – bad things happen to good people, and if you, or your child, are suffering from less than perfect health, it may not be anything you had control over. We do have control over our nutrition and micronutrients if we get the information we need.

Should you get your child's vitamin and micronutrient status tested and which tests should you do?

This is the key question. If you don't look, you won't know. Until I had my vitamin D level tested, I was unaware that I was walking around and feeling fine with a very deficient status for vitamin D. I have seen healthy athletes in their prime fracture their femurs while running or jumping, only then to find out they had a vitamin D level in single digits (normal is 30 – 100).



For some nutrients, a blood test to determine the level in the blood or serum is a good measure of your body status. This seems to be true for vitamin D. For many nutrients, the level in the blood has little correlation with the level inside the cells. How do you determine if there is enough of a nutrient inside the cells? Some labs do analysis of nutrients inside the red blood cells.

For Vitamin D, folate and B-12, you can check you levels at home here: <https://trylgc.com/paulthomasvitamin> (use DRPAUL20 for a 20% discount)

I also use a lab Spectracell [<http://www.spectracell.com>] that does a functional test to see if your cells (white blood cells) grow in the absence of a given nutrient. If your cells grow and divide normally without the added nutrient, we can assume that there is enough of that nutrient inside the cell.

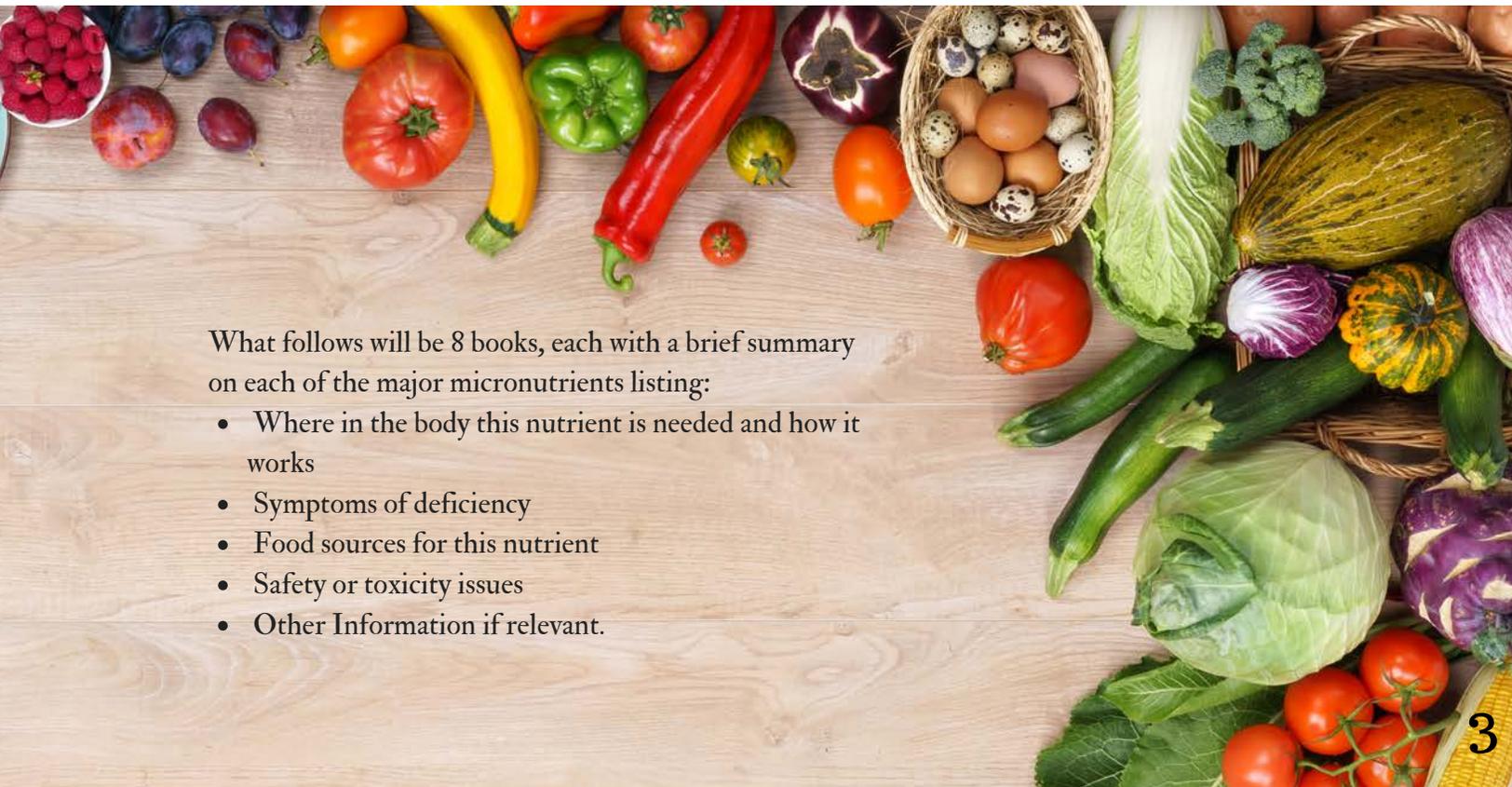
In addition to micronutrient testing are there other key health issues related to our diet and what we eat?



YES: I have seen more and more disease and suffering (eczema, asthma, allergies, autoimmune issues, intestinal issues) triggered by food sensitivities. This is not a topic of this series on micronutrients, but you should consider getting a food sensitivity panel done (IgG) and remove those foods that your body is mounting an immune response against.

Avoiding foods that are harmful to you, getting your nutrients from organic whole foods and taking those supplements needed will go a long way in optimizing your health. Add in exercise, reduce stress, drink lots of filtered water and surround yourself with nurturing friends and family.

If you cannot afford buying organic, continue to focus on whole foods with an emphasis on fruits, vegetables, seeds, nuts and whole grains. Take vitamin D, and if you are not getting a good variety of fruits and vegetables (several servings a day) consider a quality multivitamin. During pregnancy, your prenatal should have methyl-folate, +/- folic acid, (not folate or folic acid), methyl-B12, and iodine.



What follows will be 8 books, each with a brief summary on each of the major micronutrients listing:

- Where in the body this nutrient is needed and how it works
- Symptoms of deficiency
- Food sources for this nutrient
- Safety or toxicity issues
- Other Information if relevant.



Vitamin A (fat soluble) is the term used for related compounds that are either:

- Retinoids (Retinol is an alcohol, retinal is an aldehyde that we convert in our bodies to retinoic acid)
- Carotenoids like B-Carotene, are made in plants and our body converts them into retinol.
- When supplementing vitamin A, it is safest to use B-Carotene instead of Retinol or retinoic acid since these can accumulate and cause toxicity.
- **NEVER EXCEED 100% RDA OF RETINOIC ACID.**

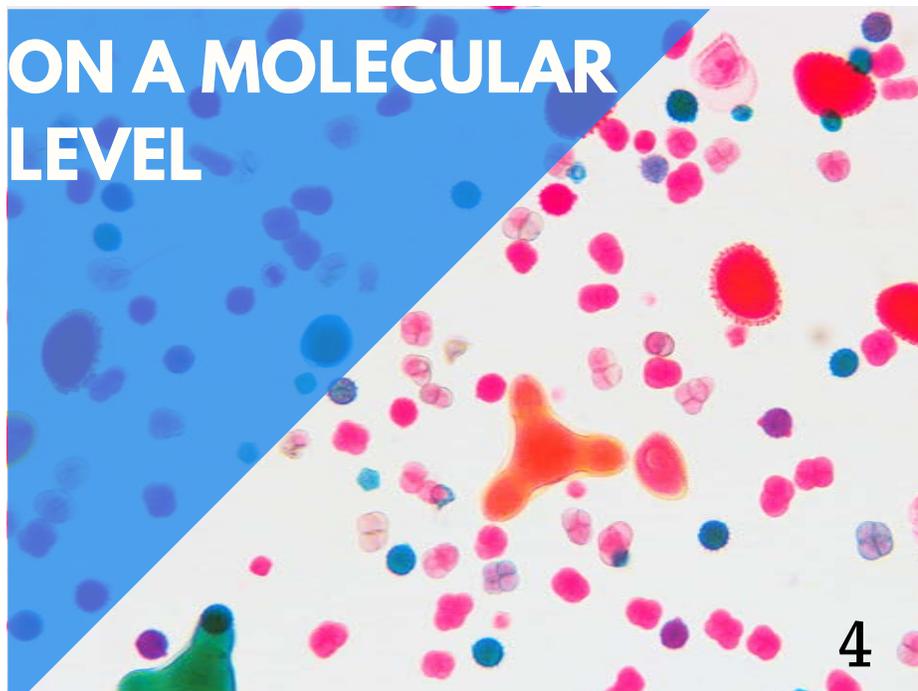
Vitamin A is known to boost the immune system;

- for activation of the T lymphocytes, and for differentiation of white blood cells, helping us fight viral infections,
- is required for the integrity of the mucosal cells lining the airways, digestive tract and urinary tract

WHY IS IT IMPORTANT?

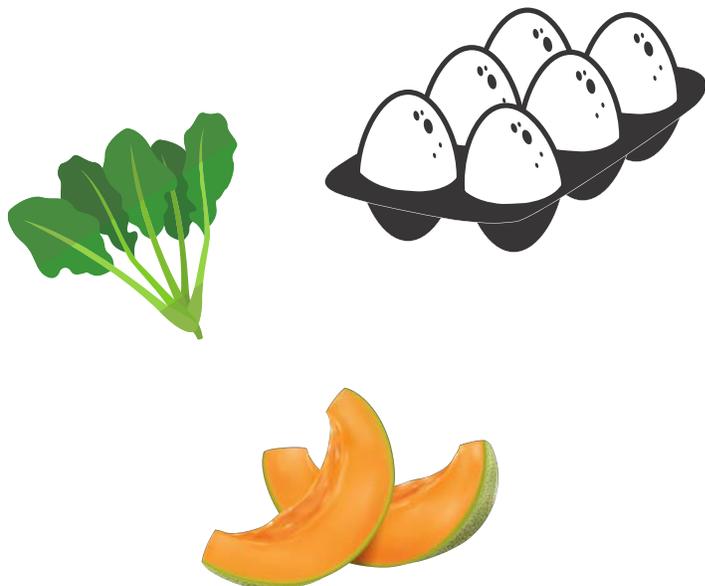
Vitamin A is essential for growth and development especially fetal development; for proper formation of limbs, heart, eyes and ears. It is involved in cell differentiation, like stem cells becoming red blood cells and bone development. It has been found to regulate the expression of genes, like the gene for growth hormone. Vitamin A is also important for the integrity of the skin.

ON A MOLECULAR LEVEL



SYMPTOMS OF DEFICIENCY

- Loss of vision. Dry eyes and loss of night vision is first, with vitamin A deficiency being the leading cause of preventable blindness worldwide.
- Increased infections (acquired immunodeficiency). Measles, respiratory infections, diarrhea, transmission of HIV are all increased when deficient.
- Reduced cancer risk (this seems to apply to carotenoids but not preformed retinoids, and high doses retinoids which can increase risk).



Animal sources (best being cod liver oil, then liver, eggs and dairy) provide retinyl palmitate, a precursor and storage form of retinol.

Plant sources provide the safer forms as alpha- carotene (carrots) and mostly beta-carotene (sweet-potatoes, carrots, cantaloupe, spinach and kale).

Table: Selected Food Sources of Vitamin A

Food	mcg RAE per serving	IU per serving
Sweet potato, baked in skin, 1 whole	1,403	28,058
Beef liver, pan fried, 3 ounces	6,582	22,175
Spinach, frozen, boiled, ½ cup	573	11,458
Carrots, raw, ½ cup	459	9,189
Pumpkin pie, commercially prepared, 1 piece	488	3,743
Cantaloupe, raw, ½ cup	135	2,706
Peppers, sweet, red, raw, ½ cup	117	2,332
Mangos, raw, 1 whole	112	2,240
Black-eyed peas (cowpeas), boiled, 1 cup	66	1,305
Apricots, dried, sulfured, 10 halves	63	1,261
Broccoli, boiled, ½ cup	60	1,208
Ice cream, French vanilla, soft serve, 1 cup	278	1,014
Cheese, ricotta, part skim, 1 cup	263	945
Tomato juice, canned, ¾ cup	42	821
Herring, Atlantic, pickled, 3 ounces	219	731
Ready-to-eat cereal, fortified with 10% of the DV for vitamin A, ¾-1 cup (more heavily fortified cereals might provide more of the DV)	127-149	500
Milk, fat-free or skim, with added vitamin A and vitamin D, 1 cup	149	500
Baked beans, canned, plain or vegetarian, 1 cup	13	274
Egg, hard boiled, 1 large	75	260
Summer squash, all varieties, boiled, ½ cup	10	191
Salmon, sockeye, cooked, 3 ounces	59	176
Yogurt, plain, low fat, 1 cup	32	116
Pistachio nuts, dry roasted, 1 ounce	4	73
Tuna, light, canned in oil, drained solids, 3 ounces	20	65
Chicken, breast meat and skin, roasted, ½ breast	5	18

SAFETY AND TOXICITY



Vitamin A is the most common vitamin to cause toxicity from over supplementation. Since it is fat soluble, it can accumulate in the body when given as vitamin A (retinoids) in quantities in excess of 8,000 - 10,000 micrograms/day or 25,000 to 33,000 IU/day (for adults) over a long period of time.

Toxicity is often called hypervitaminosis A with symptoms that may include nausea, loss of appetite, headaches and dizziness, dry skin, bone and joint and gait problems and in severe cases liver damage, hemorrhage and coma. You will not have toxicity when using beta-carotene or getting your vitamin A from natural food sources.

Excess preformed vitamin A (retinoids) have been known to cause birth defects hence the recommendations for the reduced intake amounts during pregnancy and one should not use Acutane (isotretinoin) or tretinoin (Retin-A) when you may become pregnant.

There seems to be no risk and huge benefits to taking natural carotenoids, so eat your sweet potatoes, carrots, cantaloupes and greens, squashes etc. in large quantities - beginning with your 4 month old infant and daily for life. Clearly if you eat ample amounts of these nutritious vegetables you can add huge health protective benefits in improved immunity, growth and cancer prevention.



 **RDA** 
(Recommended Daily Allowance)

Tolerable Upper Limits for preformed Vitamin A (retinol) are:
infants - age 3: 600 micrograms (2000 IU)
4 - 8 years: 900 micrograms (3000 IU)
9 - 13 years: 1700 micrograms (6000 IU)
teens & adults 3000 Micrograms (10,000 IU)
pregnancy 800 micrograms (2600 IU)

For the NIH document on vitamin A:
<http://ods.od.nih.gov/factsheets/VitaminA-HealthProfessional/>
book: "An Evidence-based Approach to Vitamins and Minerals" by Jane Higdon Ph.D



DR. PAUL'S SUPPLEMENT RECOMMENDATIONS

(Visit wellevate.me/drpaul
to get 25% discount)



Micellized Vitamin A For Children



Beta Carotene 25000 IU For Adults

Disclaimer: Please check with your health care provider to see if this supplement is appropriate for you and what dose to use.