INE | INSTITUTE OF NUTRITIONAL ENDOCRINOLOGY

Micronutrients: Introduction to Vitamins

Dr. Ritamarie Loscalzo

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

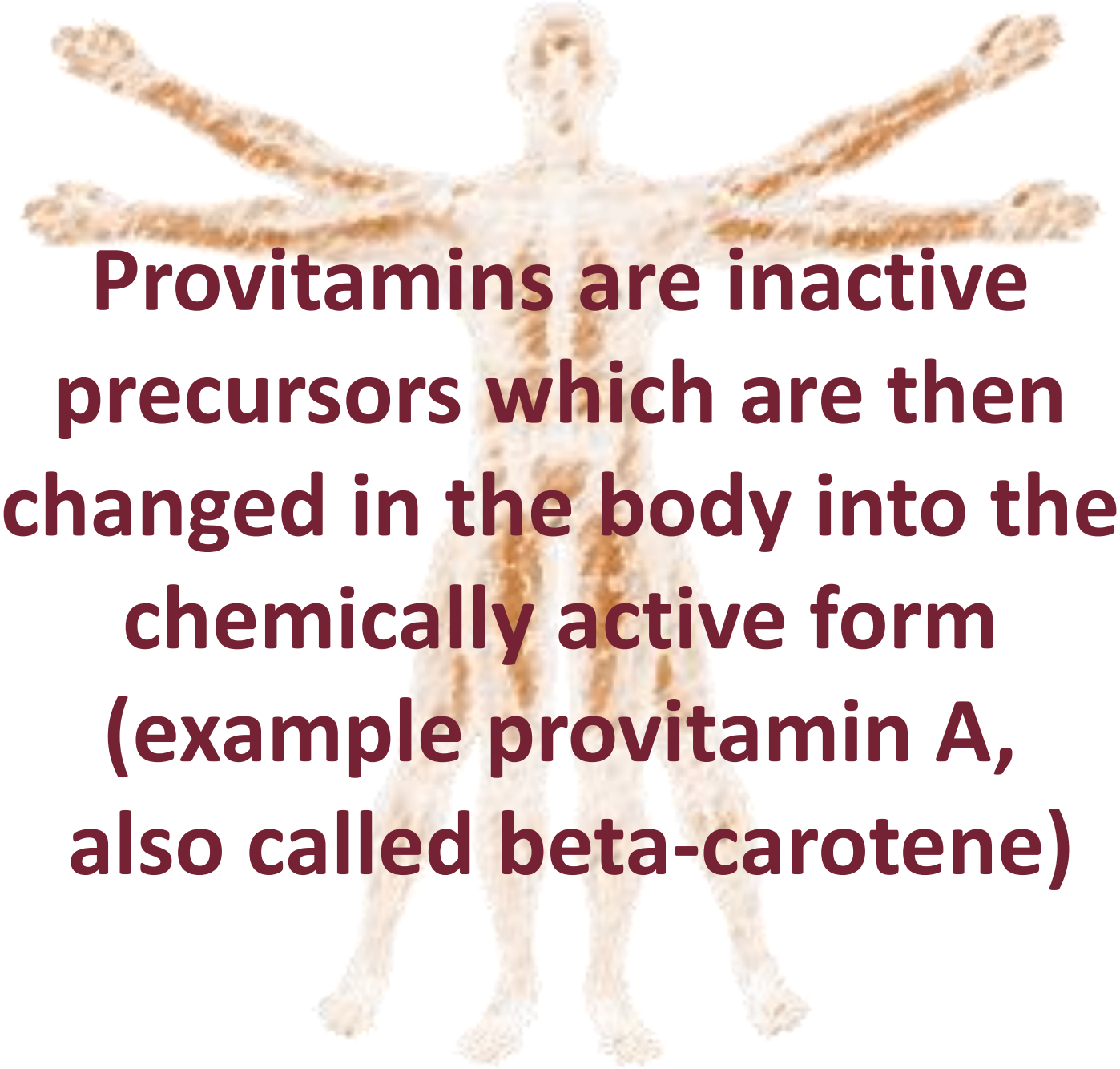
Medical Disclaimer: The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

History of the Word “Vitamin”

- ✓ Derived from “vitamine” -- a combination word made up by Polish scientist Casimir Funk, from “vita” (life) + “amine” meaning nitrogen-containing compounds (amino acids) thus “amine of life”
- ✓ Changed to “vitamin” when it was determined that they were not indeed amines

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)



Provitamins are inactive precursors which are then changed in the body into the chemically active form (example provitamin A, also called beta-carotene)

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Water-Soluble Vitamins

- ✓ Dissolve in water
- ✓ Generally not stored in the body
- ✓ Excreted via stool or urine
- ✓ Generally non-toxic in large amounts
- ✓ Easily destroyed by heat
- ✓ Include B vitamins and vitamin C

Fat-Soluble Vitamins

- ✓ Not destroyed by cooking
- ✓ Stored in liver and fat
- ✓ Excess can be toxic
- ✓ Dietary fat helps the body to assimilate
- ✓ Include vitamins A, D, E and K

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Functions of Vitamins

- ✓ Cofactors for metabolic reactions – i.e. to allow precursors to be converted to active forms
- ✓ Antioxidants
- ✓ Blood cell formation
- ✓ Brain health
- ✓ Hormone balance
- ✓ Digestion
- ✓ Mucous membrane protection
- ✓ Immune system

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

I believe that you can, by taking some simple and inexpensive measures, lead a longer life and extend your years of well-being. My most important recommendation is that you take vitamins every day in optimum amounts to supplement the vitamins that you receive in your food.

Linus Pauling

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Letter	Names	Notes/Actions
A	Retinol, Retinal, Carotenoids	Mucous membranes, eyes, immune, skin
B1	Thiamine, Benfotiamine	Energy, heart, muscle, and nerve function
B2	Riboflavin, R 5'-Phosphate	Energy, red blood cells, vision
B3	Niacin, Nicotinic Acid, Niacinamide	Energy, nerve function, circulation, and heart
B4	Choline, Adenine, Carnitine	Cell membranes, memory, neuromuscular
B5	Pantothenic Acid	Coenzyme A, adrenals, skin
B6	Pyridoxine, Pyridoxal 5'-Phosphate	Brain and nerve, hormones, protein synthesis
B7	Biotin	Hair, metabolism
B8	Inositol	Loosely considered a B vitamin
B9	Folate, Methylfolate, Folinic Acid	Red blood cell production, DNA repair, brain
B10	Pteroylmonoglutamic Acid	Really a form of folate, skin protector
B11	Salicylic Acid	Not technically a vitamin, loosely categorized
B12	Cobalamins: Methyl, Hydroxy, Adeno, Cyano	Red blood cells, DNA repair, nervous system
C	Ascorbic Acid	Collagen, immune system
D	Cholecalciferol	Too many to list
E	Tocopherol, Tocotrienol	Antioxidant
K	Phylloquinones, Menoquinones	Clotting, Bone health

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

What You Need to Know About Vitamins

- ✓ How to look for deficiency signs
- ✓ What happens when excess is consumed
- ✓ How to help your clients choose the best food sources
- ✓ When to supplement
- ✓ How to choose supplements
- ✓ Factors that help or hinder absorption
- ✓ When to use lab testing

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Deficiency Signs

- ✓ Hormone imbalance
- ✓ Fatigue
- ✓ Digestive upset
- ✓ Immune problems
- ✓ Allergies
- ✓ Depression
- ✓ Anxiety
- ✓ Skin problems
- ✓ Asthma
- ✓ Neuropathy
- ✓ Inflammation

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

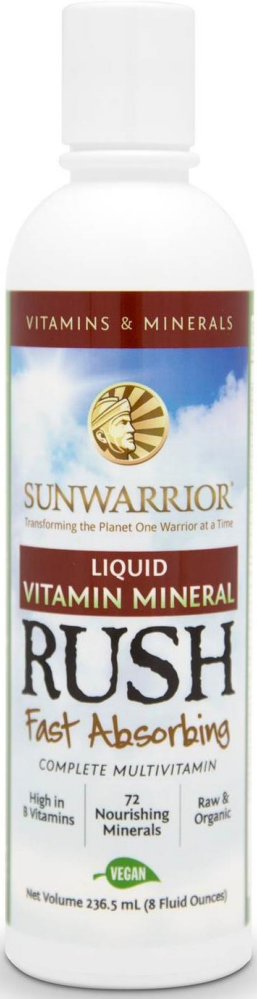
To Supplement or Not to Supplement?

- As insurance for an already healthy diet
- When symptoms of deficiency in conjunction with a healthy diet
- Under adverse conditions that diminish specific vitamins, i.e., a cold, injury, infection
- NOT as a substitute for eating well
- NOT to “make up for” deliberate binges

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Hierarchy of Ways to Supplement

- Whole food concentrates
- Liquid vitamins from concentrated whole food sources
- Powders that can be dissolved in water or green juice
- Capsules without excipients
- Tablets without binders and preservatives



 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Ingredients to Avoid in Supplements

- ✓Hydrogenated oil
- ✓Talc
- ✓Sugar
- ✓Artificial sweeteners
- ✓FD&C colors
- ✓Stearates
- ✓Sodium Benzoate
- ✓Titanium Dioxide

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Magnesium Stearate

- ✓ A lubricant so that the vitamins don't stick to one another or the equipment being used
- ✓ Safety is controversial
- ✓ One study links this compound to creating a suppressed immune system
- ✓ Other studies show that this 'chalk' will create a biofilm in the body that blocks absorbing any of the needed nutrients

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Synthetic vs Natural Vitamins

- ✓ Synthetics may be coal tar derivatives
- ✓ Naturals are lower potency
- ✓ Potentials for GMOs in synthetic
- ✓ Synthetics may be created using formaldehyde
- ✓ Some synthetics compete with natural for adverse effects (folic acid)

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Whole Foods Vitamins

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Vitamin Mineral Rush

SUPPLEMENT FACTS

Serving Size 2 tsp daily
Servings per container 24

	Amount per serving	% Daily Value
Vitamin A (Organic Beta Carotene)	5000 IU	100%
Vitamin B1 (Thiamine HC)**	4 .0 mg	275%
Vitamin B2 (Riboflavin)**	2.4 mg	142%
Vitamin B3 (Niacin)**	4.3 mg	21%
Vitamin B5 (Pantonthenic Acid)**	4.4 mg	44%
Vitamin B6 (Pyridoxine HCl) **	2.8 mg	140%
Vitamin B9 (Folic Acid)**	1.6 mg	400%
Vitamin B12 (Methylcobalamin)	12.0 mcg	200%
Vitamin C (Organic Amla 50% Extract)	60.0 mg	100%
Vitamin D3 (Calciferol)	520 IU	130%
Vitamin E (Organic Annatto Extract)	40 IU	133%
Iron***	1.0 mg	5%
Iodine***	6.3 mcg	4%
Molybdenum***	1.3 mcg	2%
Chromium***	1.4 mcg	1%
Mineral Complex	28.0 mcg	*

Proprietary Blend†

Other ingredients: Purified Water, Stevia

Percent Daily Values are based on a 2000 calorie diet. Your daily values may be higher or lower depending on your calorie needs. Daily values measured at the time of blending.

* Daily Value not established.
** Vitamin B1, B2, B3, B5, B6, and B9 are from a certified organic blend of Guava, Holy Basil, and Lemon Extracts.
*** Iron, Iodine, Molybdenum, Chromium, and all trace elements are from an organic mineral plant source.

†Our Organic Mineral Complex is produced in nature and contains minerals and elements in trace amounts including: Barium, Bismuth, Boron, Bromide, Calcium, Carbon, Cesium, Chromium, Cobalt, Copper, Europium, Gadolinium, Gallium, Germanium, Lithium, Lutetium, Magnesium, Molybdenum, Neodymium, Nickel, Niobium, Nitrogen, Oxygen, Palladium, Phosphorus, Platinum, Potassium, Praseodymium, Rhenium, Rubidium, Samarium, Scandium, Selenium, Silica, Silver, Sodium, Strontium, Sulfur, Tantalum, Tellurium, Terbium, Thulium, Tin, Titanium, Tungsten, Vanadium, Yttrium, Zinc, Zirconium

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Testing Vitamin Status

- ✓ Symptoms that can be observed and recorded on questionnaires (scorecards resource)
- ✓ Exam findings
- ✓ Lab testing
  - ➢ Direct measurement
  - ➢ Functional assessment

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Functional Tests for Vitamin Status

- ✓ Mean Corpuscular Volume (MCV)
- ✓ Methylmalonic Acid: B12
- ✓ Homocysteine: B12, B6, Folate
- ✓ Organic Acids: All
  - ➢ Genova/Metametrix
  - ➢ Great Plains
- ✓ NutrEval®
- ✓ SpectraCell

© Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Direct Tests for Vitamin Status

- ✓ **Vitamin D:** 25-hydroxyvitamin D, 1, 25-dihydroxyvitamin D: blood
- ✓ **Vitamin A:** blood
- ✓ **Vitamin E:** blood
- ✓ **Vitamin C:** urine, blood
- ✓ **Vitamin B12:** blood
- ✓ **Folate:** blood
- ✓ **Vitamin B6:** blood
- ✓ **Vitamin B1:** blood

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)

Additional Resources About Vitamins

http://www.drritamarie.com/go/WHFoodsEssentNut

- Basic Description
- Role in Health Support
- Summary of Food Sources
- Nutrient Rating Chart
- Impact of Cooking, Storage and Processing
- Risk of Dietary Deficiency
- Other Circumstances that Might Contribute to Deficiency

 © Dr. Ritamarie Loscalzo, MS, DC, CCN, DACBN, Institute of Nutritional Endocrinology (INE)