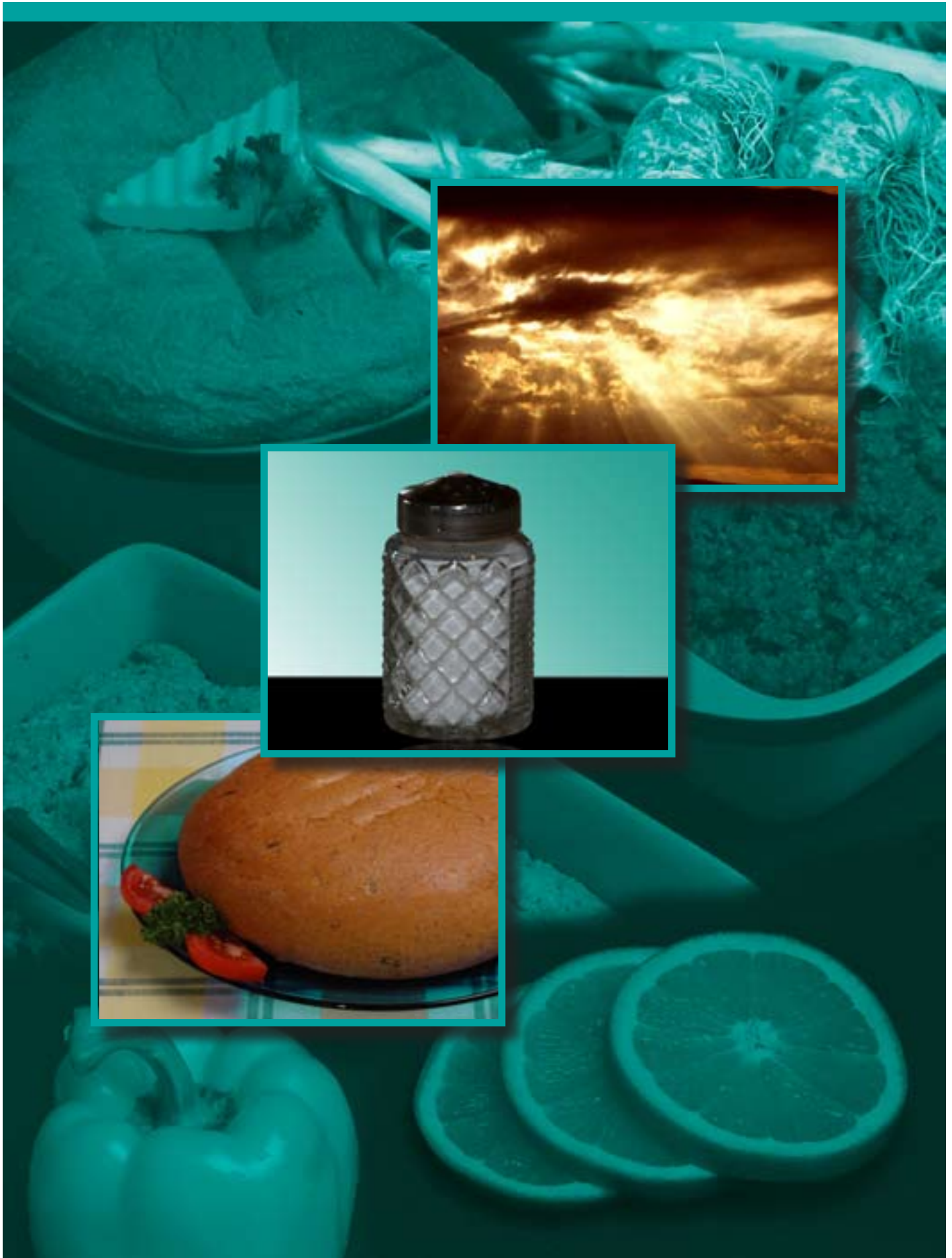


# ***B<sub>12</sub>, D & other Trace Elements*** by Angela Poch, NC

## ***B<sub>12</sub>, D & other Trace Elements Info Sheet***



### INTRODUCTION

All vitamins are vital for our health but some are more difficult to come by than others. We are going to look at B12 & D in particular as they are the most talked about in vegan and vegetarian circles, plus a few trace minerals.

B12 covers a group of compounds, mostly cyanocobalamin, that convert into coenzyme forms used in the process of DNA synthesis and nervous tissue. Without B12, homocysteine cannot convert to methionine. This is important to understand, because when someone's homocysteine levels are unusually high it can suggest a B12 deficiency.

Vitamin D is not a nutrient it is a hormone. It is vital for calcium absorption and maintenance, needed in bone growth. It is also needed for the immune system and neuromuscular system. Vitamin D also inhibits inappropriate cell division, reduces blood vessel formation around tumors, and regulates proteins that affect tumor growth, thus it is a cancer fighter and much more!

### HOW MUCH DO WE NEED?

The RDA & the WHO recommend:

1.3 to 3 mcg per day of B12

200-600 IU of Vitamin D per day.

(Trace minerals see chart)

Variations are for age, different studies, and other health needs.

### B12 SOURCES

Food? Most doctors say the B12 found in plant sources is in analog form and your body can not use it. (This has not been tested in depth, but a few studies have been done.) So we need meat right? Well not exactly. It is bacteria that produce B12. Red Star nutritional yeast is one vegan source of B12, and there is research suggesting beets, red cabbage, and other tuberous vegetables grown organically can also contain B12.

Current recommendations for vegans and vegetarians (eggs have B12, but also have a factor that blocks absorption) from most doctors and dietitians for B12, is to supplement by one of the following methods.

\* eat fortified foods two or three times a day to get at least three micrograms ( $\sim\mu\text{g}$  or mcg) of B12 a day **OR**

\* take one B12 supplement daily providing at least 10 micrograms. **OR**

\* take a weekly B12 supplement providing at least 1000 micrograms.

### Do I have to supplement?

In the effort to be unbiased it needs to be pointed out, some doctors, researchers, and scientist feel we don't need to supplement unless there is an underlying reason. Why? Because first of all there are very few studies of actual deficiencies in other wise normal vegan populations, and secondly many of the B12 deficiencies recorded are from poor digestion or the intrinsic factor (which is a glycoprotein produced by cells in the stomach. It is necessary for the absorption of vitamin B12 later on in the digestive tract). Pernicious anemia, the body's inability to properly make red blood cells, can be found in individuals who take enough B12 (such as meat eaters or supplements) because their bodies are not converting it properly. This is most often found in adults over 65, vegan or not.

While the intestine's production of B12 is too late, the mouth, tonsils, and nasal passages do produce B12 before digestion. Thus we can make our own B12, BUT if you brush it away with toothpaste it won't do you any good. In addition the body can store B12 for up to 3 years, the jury is still out on if and why we need to supplement.

### Vitamin D Sources:

Like B12 vitamin D is not found in abundance in vegetarian foods, or any foods for that matter. But unlike B12 most doctors and scientists agree we can get it from the sun. You need 20 min per day in the summer and at least 30 to 90 minutes per day in the winter with your arms and face exposed. The best times are from 11am to 4pm, avoiding scorching times for those in hotter climates. Stay out longer if you have dark skin, wearing too many cloths, or if you live further north, over 30° latitude. UVB is the best rays to produce D, which is reduced in the winter and at higher latitudes. An easy test - if you can't get a tan, there is not enough sun (yes, you can tan in the winter, just not as quickly or as dark).

You'll get the added benefits of fresh air, so why not combine it with some exercise! What about when it's really cold outside? Doctors recommend supplementing and some even recommend tanning booths in short amounts (be sure it is emitting UVB).

## Other Trace Elements:

Mineral	RDA/AI	Body Needs	Sources for	Insufficiency	Excess
Chloride	2300 mg	is needed for production of hydrochloric acid in the stomach and in cellular functions.	Salt	hypochloremia	hyperchloremia
Copper	900 $\mu$ g	is required component of many redox enzymes, including cytochrome oxidase.	Nuts, legumes, whole grains	copper deficiency	copper toxicity
Chromium	25-40 $\mu$ g	works with insulin to maintain normal blood glucose, or blood sugar levels. Early research suggests benefits to some people with diabetes or glucose intolerance.	Acidic food in stainless steel cookware, peas, whole grains	may affect glucose uptake into cells	asthma, kidney damage, allergies sinusitis, calcium deficiency, iron deficiency
Iodine	150 $\mu$ g	is required for the biosynthesis of thyroxine. Aids function of thyroid glands.	Iodized salt, Kelp, Nori	iodine deficiency	hypothyroidism
Magnesium	420 mg	is required for processing ATP and for bones. Needed by cells for genetic material and bone growth.	Nuts, legumes, green vegetables	muscle weakness; twitching; cramps, cardiac arrhythmias	Nausea, low blood pressure, nervous system disorders.
Manganese	2.3 mg	is a cofactor in enzyme functions, important in metabolism.	Whole grains, nuts	manganese deficiency	Generally from inhalation not diet.
Molybdenum	45 $\mu$ g	the oxidases xanthine oxidase, aldehyde oxidase, and sulfite oxidase. Helps regulate iron storage.	Whole grains, legumes	molybdenum deficiency	Gout-like joint pain.
Phosphorus	700 mg	is a component of bones and energy processing and many other functions. Needed for metabolism, body chemistry, nerve and muscle function.	Whole wheat bread, oats, beans	hypophosphatemia Weakness; bone pain; Anorexia.	Hinders body's absorption of calcium.
Selenium	55 $\mu$ g	a cofactor essential to activity of antioxidant enzymes. Protects all membranes, reduces risk of cancer, enhances immune system, antioxidant.	Whole grains, soy beans	selenium deficiency causes heart attack, muscular dystrophy, and cystic fibrosis.	Finger nail changes, hair loss.
Sodium	1500 mg	is a systemic electrolyte and is essential in coregulating ATP with potassium. Yes, we actually need some salt.	Salt, and many other foods	hyponatremia	hypernatremia
Zinc	11 mg	is required for several (over 100) enzymes. enhances immune system, thymus, protects against birth defects.	Legumes, whole grains	causes birth defects, infertility, chronic infections.	Nausea, diarrhea; abdominal pain; gastric bleeding.

*Please note information above was gleaned from various sources and may not be 100% accurate.*

## B12 AND THE MYSTERY OF WHY IT'S SO COMPLICATED?

We are living in a world of micro-science. Everything is broken down to it's minute form and then some. We are simply to put it, over analyzing everything. (Although some of us like that.)

In reality the biggest reason it is so complicated is because people keep arguing the same points round and round and very little scientific research and studies are being done. Many of the same studies are being reported over and over, and most of them are quite small. It comes down to two groups. Those who say you need to supplement and those who don't. Both have valid intellectual, logical, and philosophical arguments. Both have done "research" on the subject. Both are sure the other has problems with their theory.

Frankly there are not a whole lot of actual science doing objective studies. Either they are trying to prove we need supplements (\$\$ in that industry) or animal products (another huge financial backer) or from an evolutionary point of view. As the public we should be asking the universities to study this issue further.

## IODINE

Iodine is essential for proper thyroid function as well as general growth in the body.

The World Health Organization recommends 150mcg per day, but too much can be toxic. Consumption of raw brassicas, such as cabbage, broccoli and cauliflower, may increase the requirements for iodine. Seaweeds like nori and kelp are some of the best sources. Regular iodized salt or some mineral rich salt (not just plain sea salt) are other good sources of iodine.

Vegetables and grains contain trace amounts of iodine if grown in healthy rich soil. May I suggest you take up gardening?

## REFERENCES

Vegetarian Network [www.vnv.org.au](http://www.vnv.org.au)

Brian Clement, "Do You Have a B-12 Deficiency?" Hippocrates Health Institute.

Beyond Vegetarianism, "Vitamin B-12 and Reality"

B.E. Baldwin, Ph.D, "Vitamin B12 Around the World.", Journal of Health and Healing

Dr. David Reuben, "Everything you Always Wanted to Know about Nutrition"

Dr. Walter Veith, "Diet & Health"

USDA Agricultural Research Service, "Are You Vitamin B12 Deficient?", August 2000 Agricultural Research Magazine.

Office of Dietary Supplements, NIH Clinical Center. "Dietary Supplement Fact Sheet" Vitamin D & Vitamin B12 <http://ods.od.nih.gov/factsheets>

DermNet NZ, "Vitamin D", 2005 NSDS

Natural News, "Tanning Beds Can Reverse Vit D Deficiency with UV light..." by David Gutierrez

[http://en.wikipedia.org/wiki/Dietary\\_mineral](http://en.wikipedia.org/wiki/Dietary_mineral)

<http://www.qfac.com/articles/tracechart.html>

Dr. Neil Nedly, "Proof Positive"

Vegan Society, <http://www.vegansociety.com/food/nutrition/iodine.php>

National Heart Lung & Blood Institute, "Pernicious Anemia", May 2006

## DISCLAIMER

This handout is intended to offer general information which is subject to change. It is not intended to diagnose, treat, or cure any disease. We urge you to make informed decisions and work with your health professionals.

## Natural source of Vitamin D shown below.



# GIFT - Not for re-sale!

## FOR MORE INFO SHEETS:



3988 Galloway Frt Rd •  
Elko, BC V0B 1J0 •  
Ph: 1-877-597-3883 •  
Fax: 250-529-7757 •

[info@settepublishing.com](mailto:info@settepublishing.com) •  
[www.settepublishing.com](http://www.settepublishing.com) •

ISBN 978-1-897182-62-8



9 781897 182628

Made in Canada © 2008 Sette Publishing  
Revised January 5, 2009