

## NUTRITIONAL SUPPLEMENTS

### What is really essential?

HOW TO MAKE THE RIGHT CHOICES IN  
SELECTING DIETARY SUPPLEMENTS BASED  
ON YOUR INDIVIDUAL NEEDS

## WHAT DO I NEED?



- ONE CAN FIND POSITIVES AND NEGATIVES ON MOST ANYTHING ON THE INTERNET
- ITS HARD TO DETERMINE WHAT TO BELIEVE AND WHAT NOT TO BELIEVE

**SEPARATING THE FACTS AND TRUTHS FROM SALES AND MARKETING HYPE**

## YOU HAVE TO DECIDE WHAT IS IMPORTANT TO YOU AND FAMILY

- Quality
- Needs based on diet and medical needs
- Special requirements such as allergen free
- Gf/Cf
- Purity of products (contaminations)
- GMO
- Organic?

## GUIDELINES FOR SELECTION PROCESS

- Your own and family's health
- Autism diagnosis
- Family history/heredity (cancer, heart disease, diabetes, tendency toward illness)
- Family eating habits
- Family immune response
- Special dietary requirements \*(allergens)
- Special diets (GF/CF or SCD)
- Stress

## MAJOR RETAILERS HAVE STRINGENT QUALITY REQUIREMENTS FOR MOST

- Potency and stability are not concerns
- **They don't however cater to the special needs and sensitive individuals**
- These requirements make special purities and allergen requirements important as well as special formulations

## NEW FDA REGULATIONS

- ▶ Have improved quality of supplements in US as far as appearance, and potency are concerned, but not purity from contaminants
- ▶ Product lines sold by physicians usually better quality but not always
- ▶ Be careful of unknown brands in health food stores

## PRICE DOES NOT NECESSARILY DETERMINE QUALITY

- SALES AND MARKETING COSTS OFTEN ESCALATE THE PRICE
- DOES A PARTICULAR PRODUCT GET ADVERTISED A LOT ON TV? (If so, there is a good chance its overpriced)
- QUALITY TESTING, HOWEVER DOES PLAY A ROLE IN PRICING. TESTING IS EXPENSIVE
- MOST ADVERTISING IS MISLEADING

## AN EXCELLENT REFERENCE GUIDE

- Physicians Desk Reference for Nutritional Supplements
- Also PDR for Herbal Remedies
- Has accurate, valuable information to help separate the facts and has no ties to any companies, so the marketing hype is removed
- Cost is about \$50
- VERY FACTUAL AND WELL REFERENCED

## MANY STUDIES AND TRIALS OF SUPPLEMENTS ARE FLAWED

- Many of the studies done by the company marketing the supplement
- Nearly none are repeated
- Many not published
- Many not reproducible
- PDR analyzes all the available references and gives an unbiased opinion

## QUALITY SHOULD BE A FACTOR IN SELECTING SUPPLEMENTS

- KNOW YOUR SUPPLIERS
- IF YOU NEED INFORMATION ABOUT THEIR TESTING REGIMEN AND QUALITY STANDARDS, CALL THEIR QUALITY CONTROL DEPT.
- IF THEY WON'T GIVE YOU THE INFORMATION YOU REQUEST, DON'T TRUST THEM

## IF YOU EAT 3 WELL BALANCED MEALS YOU DON'T NEED SUPPLEMENTS?

- THIS MAY BE SOMEWHAT TRUE IN A PERFECT WORLD.
- BUT THE FACTS ARE THAT PEOPLE DON'T
- PLUS, COOKING DESTROYS SOME OF THE IMPORTANT NUTRIENTS PRESENT IN HEALTHY FOOD, ie THE VITAMIN CONTENT
- BAKING, BOILING AND GRILLING DESTROY VITAMINS A, THE B'S, C, D, GOOD FLORA

## EVERYONE SHOULD TAKE SUPPLEMENTS FOR INSURANCE

- BASE YOUR SUPPLEMENT REGIMEN ON YOUR PERSONAL SITUATION AND DIET
- You don't need everything

## MANY INDIVIDUALS DON'T STAY ON VITAMIN REGIMENS LONG ENOUGH

- Don't remember
- Can't feel a difference
- Took immune boosters for a year and got sick the same amount
- You have to build up your resistance and maintain supplementation for true long term effects
- On and off does little or no good

## IS NATURAL BETTER THAN SYNTHETIC?

- ALMOST ALL VITAMINS YOU PURCHASE ARE SYNTHETIC BECAUSE YOU CAN'T GET HIGH POTENCIES WHICH ARE NATURAL
- EXAMPLE: vitamin C (rose hips, acerola, fruits etc)
- EXAMPLE: B-vitamins from yeast or food extracts
- BEWARE OF MARKETING HYPE such as natural additives (artichoke stems)

## THE NATURAL EXCEPTIONS

- NATURAL VITAMIN E MAY BE BETTER ABSORBED THAN SYNTHETIC
- Some studies (U. of TX SW Medical Center) show they are equal
- Other studies (U of TN) show natural absorbed and utilized better (1.5x that of synthetic)
- But----don't overlook the fact that natural vitamin E comes from soy

## VITAMIN A FROM COD LIVER OIL

IN SOME INDIVIDUALS, NATURAL VITAMIN A THE CIS FORM FROM COD LIVER OIL MAY BE BETTER IN IMPROVING DISTORTED VISION IN AUTISTIC PATIENTS---DR. MARY MEGSON HER THEORY POSTULATES THAT THE CIS FORM OF VITAMIN A ALONG WITH 14-HYDROXYRETRORETINAL ALSO PRESENT IN CLO STIMULATES RETINAL RECEPTORS

## SYNTHETIC VITAMIN A

- Vitamin A is critical in vision and immune health
- Retinyl Acetate and Retinyl Palmitate forms are well absorbed (60 to 90%)
- Vitamin A deficiency is prevalent in foreign underdeveloped nations and leads to blindness, measles and other infections

## YOU CAN OVERDOSE ON VITAMIN A IN THE SYNTHETIC FORM

- Vitamin A in its pure form is stored in the liver and can result in vitamin A toxicity if used in excess for long periods of time
- Sometimes necessary for high doses if immunity is depressed, but only for short periods (Mycellized A)
- Children and adults can take up to 10,000 IU daily as a safe level.

## BETA CAROTENE AND CAROTENOIDS

- Not stored in the liver and does not lead to overdose
- Body uses only what it needs

## NUTRITION NEEDS FOR ALL

- Will address special autism needs in each category
- Autism needs usually based on demonstrated traits or symptomatic requirements
- Often require dosage changes

## 1. A DAILY VITAMIN AND MINERAL FORMULA

- Containing 100 to 200 % recommended DV
- Autism formulas sometimes higher potency or special formulations
- Pre-conception or pregnancy, switch to a preconception formula or prenatal with extra folate to prevent neural tube defects. (Some 5-MTHF)

## 2. SUPPLEMENTAL VITAMIN D-3

Latest research indicates importance

- Vitamin D-2 is found in plants and is not important in humans
- Vitamin D-3 is the form you get from sunlight and the form generally supplemented. It is the active form in humans.
- Prescription Vitamin D is D-2 and is inferior to the form in dietary supplements.

## 2. VITAMIN D-3

- Much new research on vitamin D-3 going on in Cancer, heart disease, stroke, Parkinson's, Alzheimer's, Muscle weakening diseases, Birth defects and autism.
- Much of this research is being done in very high doses up to 50,000 IU.
- Most supplement companies are now offering vitamin D-3 products in 1000 to 5000 IU.

### VITAMIN D SAFE LEVELS

- Vitamin D can accumulate in the liver as well as vitamin A, so for the time being until more research is done, 4000 IU should probably be the maximum daily intake in addition to your daily multiple which will probably have 400
- SUNDAY LECTURE ON VITAMIN D

### VITAMIN D COUNCIL FINDINGS

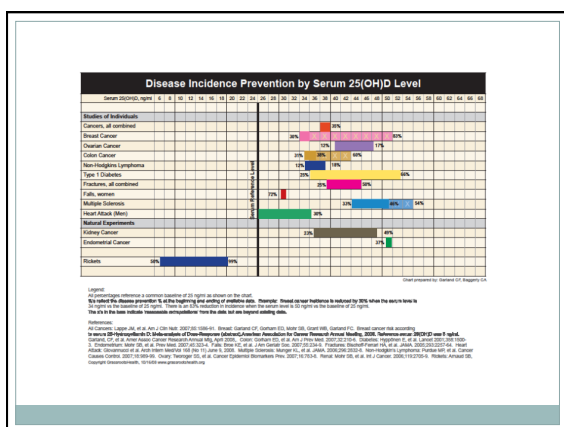
- Reports that increasing vitamin D levels to 2000-5000 IU per day may:
  - Increase overall immunity by increasing antibodies that fight infection.
  - Lessen chances for developing diseases

### DON'T GUESS ON VITAMIN D

- Get your vitamin D levels tested and supplement based on those results
- Absorption varies dramatically between individuals and the amount of sun one gets also contributes to blood levels.
- Supplement companies sell Vitamin D-3 products and is the preferred form

### WHAT ARE DESIRABLE VITAMIN D LEVELS BASED ON RECENT STUDIES?

- When you get Vitamin D levels tested, they are reported as 25 Hydroxy Vitamin D which is the form in blood serum (Combined D-2 and D-3).
- Historically, levels used to be recommended based on what prevented rickets (20 ng/ml)
- Recent studies have shown that the desired range for preventing diseases to be 32-100 ng/ml
- Optimum for preventing diseases – 50-80 ng/ml



### VITAMIN B-12

- Cyanocobalamin is use in multivitamins because it is the stable form in combinations
- Methylcobalamin is very unstable unless in solution at the correct pH and therefore used primarily for injections or sublingual applications
- In most multiple vitamin formulas methylcobalamin is decomposed and useless in a short time.

### THE FACTS ABOUT CYANOCOBALAMIN

- THE BODY HAS TWO DETOXIFICATION MECHANISMS TO DEAL WITH THE CYANIDE MOLECULE PRESENT IN CYANOCOBALAMIN
- Kreb's cycle of human biochemistry utilizes alpha keto glutaric acid to detoxify it
- If the cyano molecule ever found its way into a body cell, rhodanese deactivates it

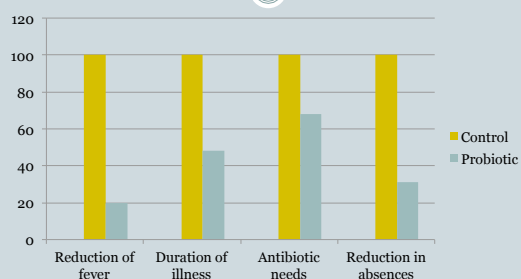
### 3. IMMUNE BOOSTING SUPPLEMENTS

- Extra Zinc
- Extra Vitamin C (2-5 grams)
- Extra Selenium (Up to 200 mcg.)
- Extra A and E
- Herbals such as Astragalus, Elderberry, Olive Leaf, Turmeric, Quercitin, Beta Glucan, Colostrum, Garlic, other select herbs
- Don't overlook probiotics

### PROBIOTICS AND IMMUNITY

- Recent double blind placebo controlled study by DANISCO in conjunction with School of Public Health U. of Texas and Tongi Univ. Shanghai, China showed remarkable results
- 326 Children 3-5 years of age for six months

### Probiotics



### WHEN ARE IMMUNE BOOSTERS NEEDED AND WHY

- Frequency of illness
- Do you get everything that "goes around"
- Flu susceptibility or infection susceptibility
- Autism immune deficiencies and increasing allergies
- To stay healthy

### FICTION--SPECIALIZED FORMS OF VITAMIN C ARE A LOT BETTER

- Ester C (Calcium Ascorbate)
- Fast C (Supposedly faster absorption but the excretion rate nearly the same as regular C)
- C plus mineral combinations (little evidence that the C is better absorbed)
- C with bioflavonoids (Usually not enough to do any good. Better off to take a bioflavonoid product separately for capillary strength)

#### 4. CALCIUM AND MAGNESIUM

- Multiples often can not fit enough Calcium and Magnesium in the dose to satisfy daily requirements.
- Especially important if dairy free diet is involved.
- Important for bone health, prevent osteoporosis and necessary for heart health.

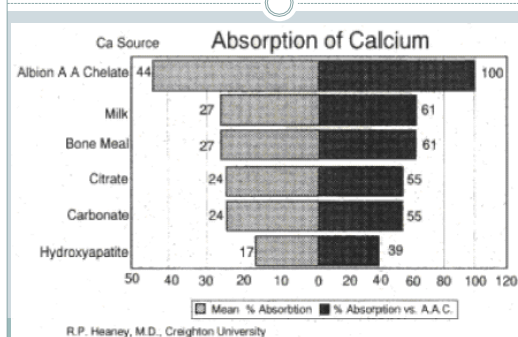
#### MINERALS OFFER MORE CHOICES THAN ANY OTHER SUPPLEMENT TYPE

- CALCIUM (base your choice on your needs)
- Lots of untrue information floats around regarding calcium, such as Calcium Carbonate is not absorbed, or you must take Calcium and Magnesium together or they are not absorbed.
- One form is much better absorbed than another.

#### THE CALCIUM FACTS

- You should take your calcium near meals because it is much better absorbed with food
- There is not a great difference in the absorption of different calcium compounds if taken with food
- Hydroxiapatite 17% Carbonate 27%
- Citrate 29% Milk 29% Citrate/Malate 35%
- Bis-Glycinate Chelate 44% (PDR NUT. SUPP)

#### CALCIUM ABSORPTION RATE STUDY



#### SPECIAL INDIVIDUAL NEEDS FOR CALCIUM SUPPLEMENTATION

- If your body does not product normal amounts of stomach acid (achlorhydria), then don't use calcium carbonate unless you take it with food AND also use betaine HCl for acidity or take the calcium supplement with a vitamin C supplement. Because in these individuals that are lacking stomach acid, the calcium carbonate on an empty stomach is not digested properly causing gas and or bloating.

#### OTHER CALCIUM FACTS

- Clinical trial at Hines, IL VA hospital published in the American Journal of Clinical Nutrition indicated magnesium had little or no effect on calcium absorption at varying concentrations.
- Expected results--- milk has little magnesium and calcium from milk gets absorbed fine.

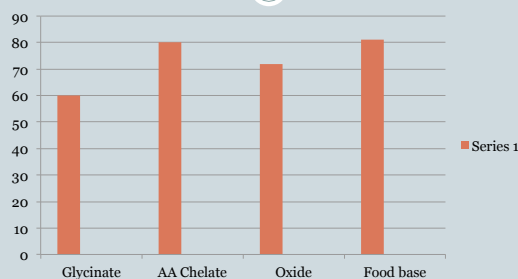
### MORE CALCIUM FACTS

- Your body can only absorb calcium so fast, so it is better to dose 500-600 mg. twice per day instead of 1000-1200 mg once.
- Vitamin D enhances absorption of calcium
- Boron may also play a role in increasing calcium absorption.
- Adequate calcium levels control osteoporosis and a lesser known fact, reduce weight gain.

### MAGNESIUM SUPPLEMENTS

- Involved in over 300 metabolic reactions
- Helps regulate heart rhythm
- Don't oversupplement with Mg
- Infants 75 mg
- Children 80-200
- Teen girls and women 200-350
- Adult men 400 mg.

### MAGNESIUM ABSORPTION RATES



### RESULTS CONTRARY TO WHAT YOU HEAR AND READ

- The type of Magnesium supplement chosen should be based on individual needs
- Severe constipation (Citrate)
- Loose stools or sensitivity to magnesium (Glycinate or Chelate)
- Able to tolerate magnesium OK (Oxide)
- Magnesium Malate (good source, bad taste)
- MOST MAGNESIUM DRUG PRODUCTS MADE WITH MAGNESIUM OXIDE

### 5. ZINC FOR IMMUNE SYSTEM BOOST AND GROWTH AND DEVELOPMENT

- Zinc Citrate (mother's milk)
- Zinc Chelates (well absorbed)
- Zinc Picolinate (well absorbed source) but with some negative connotations (Gary Evans PhD)
  - Long term ingestion of picolinic acid could cause buildup of excess picolinic acid, a chelator.
  - Then unwanted metals such as lead, cadmium could be chelated and introduced in cells. Excess picolinic acid may cause kidney problems, so use with caution

### 6. IRON SUPPLEMENT

- Essential trace mineral in human nutrition
- Important during pregnancy
- Involved in respiration and oxygen transport
- %DV is 18 mg. Many individuals get enough through food, though 25% may be deficient
- Iron deficiency anemia can result
- Autistics seem to generally be high in iron and usually don't require supplementation



## FORMS OF IRON SUPPLEMENTATION

- If supplementation is needed the form is important because iron is very hard on the gastrointestinal tract
- Ferrous sulfate and ferrous gluconate are harsh on the stomach
- Ferrous fumarate is better but still harsh
- Iron bis-glycinate is the gentle recommended form for sensitive individuals. Iron Choline Citrate also OK.

## SPECIALTY SUPPLEMENTS

- Co Q 10
- Essential Fatty Acids
- Amino Acids
- Antioxidants
- Essential Fatty Acids
- Probiotics
- Enzymes

## 7. COENZYME Q-10

- One of the most important supplements
- No life without Co Q-10
- Cell energy, heart health,
- Being investigated in many diseases (Alzheimers, ALS, MD)
- Body produces CoQ10 but production decreases with age
- Statin Drugs deplete body of Co Q 10. If on Zocor, Lipitor, Mevacor, or other statin, supplement with CoQ10 mandatory or early death can occur.

## DOSAGE OF COQ10

- No recommended DV as yet
- Best taken with fatty food for best absorption
- Kids 20-25 mg up to 100 mg in some situations
- Adults 100 mg as maintenance dose
- Heart issues or congestive heart failure 200-500 mg. or if on statins

## SPECIAL FORMS OF COQ10

- Almost all the clinical trial work has been done on plain Coenzyme Q 10 (Ubiquinone). It is all very positive
- Now there are specialty forms getting a lot of advertising.
- Ubiquinol is called the active form because the body has to convert CoQ10 to ubiquinol in order to utilize. (May benefit older people)

## SPECIAL FORMS

- Literature suggests that that conversion may get reduced in old age. In that case Ubiquinol may be more beneficial (Need more studies)
- Q Sorb---a special lipid delivery system which may help absorption especially if taken on an empty stomach
- Regular CoQ10 taken with fatty foods probably about the same.

## 8. ESSENTIAL FATTY ACIDS

- Omega 3's primarily
- DHA and EPA most often from fish oil products
- DHA especially important for infants and brain development (Now in infant formulas)
- EPA for heart health and general body functions (artery health and heart function)
- Also Flax a good source

## ESSENTIAL FATTY ACIDS--AUTISM

- Most doctors find effective in autism and developmental disorders for growth and development including speech.
- High DHA containing for youngest
- Older children higher EPA

## 9. PROBIOTICS

- Probiotics are very beneficial to gastrointestinal health by improving good bacterial flora
- In autism about 80% have gastrointestinal issues
- In general population most individuals report improved digestive health.
- Probiotics are very difficult to manufacture well
- A lot of probiotics in the marketplace are dead or useless

## THE IMPORTANT CRITERIA IN PROBIOTICS

- Protect from heat and moisture in manufacture, storage, and shipping
- Protect from stomach acid when ingested
- How many live organism's does a product deliver?
- Storage after opening

## BEST SCENARIO FOR HIGH QUALITY PROBIOTICS

- Manufacture under low temperature and dehumidified conditions
- Add some nitrogen and a desiccant to the bottle before capping
- Store at cold temperatures
- Ship under refrigeration
- Refrigerate after opening
- High number of colony forming units per dose

## EXCEPTIONS

- Some companies may microencapsulate the probiotics and say they don't need cold storage.
- Microencapsulation can protect to some degree, but extremely hot temperatures will kill the strains regardless, though they may survive ok at room temperatures. Always better at cold temps
- Store a probiotic in a hot mail box in the summer in Dallas TX and it will be dead

## 10. DIGESTIVE ENZYMES

- Animal (Pig and Cow) based Rx enzymes such as Creon or Viokase are very effective for aiding protein, starch and fat digestion
- Stomach acids destroy these enzymes so they must be swallowed and be enteric coated
- Contain unwanted dyes and ingredients
- Many individuals and physicians want a more natural alternative

## 10. PLANT BASED DIGESTIVE ENZYMES

- This is the natural alternative and depending on the formulation, provide the option of aiding digestion of all the different food groups
- Derived primarily from Aspergillus which is a mold. Individuals with severe mold allergy may not be able use these even though the mold derivatives have been removed through numerous purifications.

## 11. ANTIOXIDANT SUPPLEMENTS

- |                |                      |
|----------------|----------------------|
| • Vitamin C    | • Elderberry         |
| • Selenium     | • Cranberry          |
| • Vitamin E    | • Beta Carotene      |
| • Zinc         | • Acai               |
| • Turmeric     | • Green Tea          |
| • Pycnogenol   | • Other select herbs |
| • Resveratrol  |                      |
| • Milk Thistle |                      |

## WHY DO I NEED ANTIOXIDANTS

- External factors such as pollution, sunlight, chemicals, heavy metals, pesticides trigger the formation of free radicals which begin an oxidation process called oxidative stress.
- Oxidative stress causes damage to cellular components and leads to cell death or abnormal growth (cancer)

## OXIDATIVE STRESS

- Impossible to stop all oxidative stress which can lead to cancers.
- Taking Antioxidant supplements can retard this free radical formation and prevent disease as we age.
- An important biomedical treatment for some autism.
- A form of long term health insurance, but expensive. May not see results for years.

## 12. Amino Acids

- Protein powders with full amino acid profile for those who don't eat enough protein
- Free forms of amino acids such as taurine, glycine, theonine etc. Usually for specific purposes. DO NOT PROVIDE NUTRITIONAL PROTEIN.
- Important in some autism situations.

### CATEGORY RECAP

- |                     |  |
|---------------------|--|
| • Daily Multiple    | Everyone   |
| • Vitamin D-3       | Everyone   |
| • Immune Boosters   | Probably Everyone                                    |
| • Calcium/Magnesium | Probably Everyone                                    |
| • Zinc              | Probably Everyone                                    |
| • Iron              | Only if deficient                                    |
| • CoQ 10            | Everyone especially<br>as you age. Dose<br>dependant |
- on health.

### CATEGORY RECAP CONTINUED

- |                         |  |
|-------------------------|--|
| • Essential Fatty Acids | Probably everyone  |
| • Probiotics            | If needed  |
| • Digestive Enzymes     | If needed  |
| • Antioxidants          | Probably everyone<br>or eat lots of fruits<br>and vegetables |
| • Amino Acids           | If needed for specific<br>condition                          |

### SPECIALTY PRODUCTS

- Didn't review: Used for specific treatments in autism or specific health situations but not considered essential.

TMG-DMG

P5P

Inositol

Sleep Aids

Herbals

Diet Supplements

### SUMMARY

- Get your own facts and watch out for marketing hype
- Read scientific studies, not company websites
- Base your nutritional supplement regimen on your own or family needs, diet, drugs taken overall health etc.
- Know your suppliers and their quality