The Role of Nutrition in Naturopathic Medicine: A Historical and Practical Perspective

DR. JACLYN CHASSE, ND
Nutrition on the Therapeutic Order

High Force Interventions

Synthetic
Symptom Relief
Use of drugs to palliate

Natural Symptom Control
Use of natural substances to palliate

Address physical alignment
Restore proper structural integrity

Support & Restore Weakened Systems
Aid regeneration of damaged organs

Stimulate the Self-Healing Mechanisms
Recognize the Vis Medicatrix Naturae

Establish the Foundation for Optimal Health
Identify and remove the obstacles to cure; assess the determinants of health

www.mtwholehealth.com
DETERMINANTS OF HEALTH

SPIRITUAL LIFE
FRESH AIR
EXPOSURE TO NATURE
CLEAN WATER
NATURAL LIGHT
CULTURE AND COMMUNITY
REST

DIET, NUTRITION
UNADULTERATED FOOD
DIGESTION, TOXEMIA
SLEEP
EXERCISE
SOCIOECONOMIC FACTS
LOVING AND BEING LOVED
MEANINGFUL WORK

www.thrivepluswell.com
Standard American Nutrition
Foundational Nutrition Used to be Easy!
Today, things are different!
Our Diet Favorites

- Anti-estrogenic diet
- Blood Type Diet
- Low glycemic diet
- Mediterranean diet
- Paleo diet
- FODMAPS
- SCD
- Ketogenic Diet
- Elimination Diet
- Anti-inflammatory diet
NDs were ahead of their time, and still are!

Leaky Gut Syndrome → Intestinal Hyperpermeability

Fermented foods → Power of Probiotics

Detox for health → Impact of heavy metals on chronic disease
Current Preventive Medicine practice

- Focus on patients’ own behavior in a one-dimensional way
  - Stress management
  - Diet
  - Environmental exposures
  - Exercise

- We are missing out on the opportunity to make a greater epigenetic impact!
Is food a calorie? Or is it more?

Food is INFORMATION!
The Agouti mouse

Mothers fed the same chow during pregnancy.

No supplementation

Supplementation with
- Folic acid
- Choline
- Anhydrous betaine
Mother of brown mouse was supplemented 2 weeks before mating through pregnancy and lactation.

After weaning, mice fed the same chow for 21 days, when the picture was taken.

Methylators given to mother changed genetic expression of offspring.
Key periods of life to focus on nutrition: Pubertal
Pubertal

- Slow growth period (Ages 8-12)
- Some effects seem to be sex-specific
  - Avon Longitudinal Study
    - Fathers who started smoking before age 11 years had sons (but not daughters) with greater BMI
    - Paternal grandfather’s food supply associated with mortality of grandsons only, grandmothers’ food supply associated with mortality of granddaughters

Eur J Hum Genetics 2006;14:159-66.
Pre-Pubertal Behaviors
Several Studies with similar results

- Males had increased risk of mortality if their fathers had good nutrition during their slow growth period (SGP)
- When a father experienced poor food availability or famine during the SGP, their sons were protected against cardiovascular death
- Similar trends found in grandsons and granddaughters of grandfathers and grandmothers (respectively) who had plentiful food supply during their SGP, although not as pronounced.
- With mothers, protection was conferred to female offspring when mother had plentiful food during her SGP
During slow growth period, food availability has an impact on transgenerational response.

"Transgenerational responses to ancestors’ nutrition prevailed as the main influence on longevity.”
Interventions during Puberty

- Focus on nutrition during this time, especially among boys ages 8-12
- Education about impact of lifestyle habits such as smoking and poor diet on self and future generations
- Consider supplementation with basic nutrients such as multivitamin and omega 3 to support healthy gamete development.
Key periods of life to focus on nutrition: Prenatal

The Prenatal Period
Perinatal influences

- **Nutritional factors**
  - Maternal food supply: feast and famine
  - Maternal macronutrient intake
  - Gestational blood sugar
  - Nutrient-specific interactions

- **Environmental factors**
  - PACs and birth outcomes
  - Phthalates
  - Xenoestrogens

- **Emotional factors**
  - Stress and anxiety

Jacelyn Chasse ND, AANP 2011
Maternal Low Protein Diet and Blood Sugar

- Maternal low protein diet correlated with
  - Increased glucocorticoid receptor (GR) expression
    - Leads to increased capacity for gluconeogenesis, which may contribute to insulin resistance
  - Decreased expression of enzyme that inactivates glucocorticoid receptor (11B-hydroxysteroid dehydrogenase type II)
  - Upregulates glucokinase (GK) expression in liver
    - Increased capacity for glucose uptake

Promoter genes imprinted for glucocorticoid metabolism

- Increased gene transcription leads to increased susceptibility of metabolic syndrome phenotypes.

Maternal low protein diet correlated with:

- Increased expression of Acetyl Co-A carboxylase and fatty acid synthase in liver.
- Increased blood triacylglycerol (TAG) and fatty acid concentrations.
- Impaired lipid metabolism.

- Lower concentrations of DHA in liver and brain
  - In non-supplemented diet, so dependant on conversion from α-linolenic acid

Br J Nutr 2003;90:345-52
Maternal Low Protein Diet
Epigenetic effects

- Vascular dysfunction
- Impaired immunity
- Increased susceptibility to oxidative stress
- Increased fat deposition
- Altered feeding behavior
- These effects can be decreased/prevented with maternal supplementation of folic acid!!

Nutr Res 2000;20:995-1005
Mech Ageing Dev 2005;126:804-12

Jaelyn Chasse ND, AANP 2011
Maternal High Protein Diet

- Motherwell, Scotland study
- Mothers instructed to consume 0.45 kg meat daily and to avoid carbohydrates during pregnancy
- Adult offspring had
  - Increased cholesterol
  - Increased blood cortisol levels

J Clin Endocrinol Metab 2003;88:3554-60.
Potential nutrient intervention

- Folate (5 mg/kg or 150 mg dose for adult)
- Glycine (5 mg/kg or 150 mg dose)
- Butyrate
- Sulforaphane
- Garlic organosulfur compounds
- Zinc
- Iron
- Vitamin D
- Niacinamide
- Riboflavin
- Vitamin B12
- Vitamin A

Maternal dietary exposure to methyl donors (folic acid, SAM) may be a determinant in modulating the susceptibility to diseases in adult life:

- Diabetes
- Metabolic syndrome
- Glucocorticoid excess
- Obesity
- Hypertension
- Insulin resistance
- Hyperlipidemia
- Hyperglycemia

Core Needs through Nutrition Today

- Consider epigenetics and the importance of phytonutrients for optimum genetic expression
- Avoid food as a cause of disease
- Manage Inflammation
- Balance insulin and blood glucose
- Enhance toxin biotransformation
- Provide antioxidants to mitigate cellular damage
- Ensure healthy fat
- INDIVIDUALIZE & PERSONALIZE!
The Importance of Healthy Fats
The Importance of Healthy Fats
The importance of Phytonutrients

Phytonutrients play a key role in most of these desirable effects from food!

- Produced by plants as part of their normal metabolism
- Preparation can affect phytonutrient status
- There are 10,000 phytonutrients in our food supply (that have been identified!)
- Phytonutrients affect cellular messaging through multiple biochemical communication pathways

Most people don’t get enough!

From America’s Phytonutrient Report, 2009, using data from NHANES and conducted by Nutrilite.
Phytonutrients influence other major nutrition needs

- Metabolic balance and insulin/glucose regulation
- Inflammation
- Detoxification
- Cellular protection
# Phytonutrient Benefits: Red Foods

<table>
<thead>
<tr>
<th>Phytonutrient</th>
<th>Benefits</th>
<th>Foods rich in this phytonutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lycopene</td>
<td>Reduces risk of breast, prostate, skin cancer</td>
<td>Tomatos</td>
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<tr>
<td></td>
<td></td>
<td>Pink grapefruit</td>
</tr>
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<td></td>
<td></td>
<td>Guava</td>
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<td></td>
<td></td>
<td>Watermelon</td>
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<tr>
<td></td>
<td>Protects heart health</td>
<td></td>
</tr>
<tr>
<td>Anthocyanins</td>
<td>Reduce cancer risk</td>
<td>Berries (cherries, strawberries,</td>
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<tr>
<td></td>
<td></td>
<td>cranberries)</td>
</tr>
<tr>
<td></td>
<td>Support healthy heart &amp; BP</td>
<td>Beets</td>
</tr>
<tr>
<td></td>
<td>Promote cognitive function</td>
<td>Red onion</td>
</tr>
<tr>
<td></td>
<td>Reduce risk of diabetes complications</td>
<td>Kidney/red beans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red cabbage</td>
</tr>
<tr>
<td>Astaxanthin</td>
<td>Antioxidant for liver and skin health</td>
<td>Salmon</td>
</tr>
<tr>
<td></td>
<td>Immune stimulant</td>
<td>Algae</td>
</tr>
<tr>
<td></td>
<td></td>
<td>crustaceans</td>
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</tbody>
</table>

Also rich in Vitamin C & Potassium
# Phytonutrient Benefits: Purple Foods

<table>
<thead>
<tr>
<th>Phytonutrient</th>
<th>Benefits</th>
<th>Foods rich in this phytonutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenolics</td>
<td>May promote healthy aging</td>
<td>Tomatos Pink grapefruit Guava Watermelon</td>
</tr>
<tr>
<td>Anthocyanins</td>
<td>Reduce cancer risk Support healthy heart &amp; BP Promote cognitive function Reduce risk of diabetes complications</td>
<td>Berries (blueberries, blackberries, elderberry, grapes)</td>
</tr>
</tbody>
</table>

Also rich in Vitamin C & Potassium
## Phytonutrient Benefits: Green Foods

<table>
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<tr>
<th>Phytonutrient</th>
<th>Benefits</th>
<th>Foods rich in this phytonutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoles</td>
<td>Reduces risk of breast, prostate</td>
<td>Cruciferous veggies!</td>
</tr>
<tr>
<td>EGCG- catechin, epicatechin</td>
<td>Support cardiovascular and metabolic health, promotes hormone balance,</td>
<td>Green Tea</td>
</tr>
<tr>
<td></td>
<td>improve blood flow, lowers cholesterol</td>
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<tr>
<td>Folate</td>
<td>Methylation</td>
<td>Leafy greens (foliage)</td>
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<td></td>
<td>Supports cell growth</td>
<td></td>
</tr>
<tr>
<td>Lutein/Zeaxanthin</td>
<td>Promotes good vision, reduces risk of macular degeneration/cataracts</td>
<td>Leafy greens, romaine lettuce, broccoli,</td>
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<td></td>
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<td>green beans, kiwi, peas, honeydew</td>
</tr>
</tbody>
</table>

*Also rich in Vitamin C, K, Folate and Potassium*
## Phytonutrient Benefits: Orange/Yellow Foods

<table>
<thead>
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<th>Foods rich in this phytonutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carotenes (Beta Carotene)</td>
<td>Supports immune function, supports heart health, proper vision, and reduces cancer risk</td>
<td>Carrots, sweet potatoes, butternut squash, cantaloupe, peaches, apricots</td>
</tr>
<tr>
<td>Bioflavonoids (hesperidin, rutin)</td>
<td>Antioxidant powerhouse! Promotes heart health, immune balance, vision, healthy skin, and reduces cancer risk</td>
<td>Citrus fruits, peaches, papaya, apricots, pears, yellow pepper</td>
</tr>
</tbody>
</table>

Also rich in Vitamin C, Folate and Potassium
### Phytonutrient Benefits: White Foods

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<th>Benefits</th>
<th>Foods rich in this phytonutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allicin/Allicillin</td>
<td>Lower cholesterol, promote healthy bp, lowers cancer risk</td>
<td>Garlic, onion, chives, leeks, shallots</td>
</tr>
<tr>
<td>Flavonoids</td>
<td>Lowers cancer risk</td>
<td>Asparagus, celery, mushrooms, pears, white grapes/wine</td>
</tr>
</tbody>
</table>

Also rich in Vitamin C, K, Calcium, and Folate
Phytonutrients can change the story!

Phytonutrients carry information to optimize epigenetic expression to favor:

- Healthy metabolism
- Healthy inflammatory balance

And more!
THE SECRET KILLER

The surprising link between inflammation and heart attacks, cancer, Alzheimer's and other diseases

What you can do to fight it
Role of Inflammation in human disease

- Cardiovascular disease
- Autoimmune disease
- Alzheimer’s Disease
- Neurological Diseases
- Pulmonary disorders
- Arthritis
- Diabetes
- Cancer
Essential fatty acids play an essential role in managing inflammation.

- Omega 6:3 ratio should be 1:1
- For most Americans, it is about 20:1

Data shows efficacy in the use of n-3 fats for inflammatory conditions like Crohn’s and UC.

- Omega 3 FA reduces cardiac risk factors

Phytonutrients play an essential role in managing inflammation, especially some targeted phytonutrients such as curcumin, cocoa, polyphenols.
Where do we go from here?

- We are learning, with the input of phenotypic markers, disease states, and genetics, how to better target nutrition to the individual!

The age of PERSONALIZATION
<table>
<thead>
<tr>
<th>Determinants of Health</th>
<th><a href="http://www.thrivepluswell.com">www.thrivepluswell.com</a></th>
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<tbody>
<tr>
<td><strong>Spiritual Life</strong></td>
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<tr>
<td>Fresh Air</td>
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<td>Exposure to Nature</td>
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<td>Clean Water</td>
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<tr>
<td>Natural Light</td>
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<tr>
<td>Culture and Community</td>
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<tr>
<td>Rest</td>
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<tr>
<td><strong>Diet, Nutrition</strong></td>
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<tr>
<td>Unadulterated Food</td>
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<tr>
<td>Digestion, Toxemia</td>
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<tr>
<td>Sleep</td>
<td></td>
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<tr>
<td>Exercise</td>
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<td>Socioeconomic Facts</td>
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<td>Loving and Being Loved</td>
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<td>Meaningful Work</td>
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