Digestive Wellness

The Foundation of Health

May 23, 2017

What we’re up against!

- Digestion problems
- Genetics
- Poor quality food
- Environmental toxins, stress, heavy metals
- Low dietary fiber
- Foodborne pathogens
- Cigarette smoking
- Stress (physical, emotional, hormonal)
- Low stomach hydrochloric acid

Some Basics

1. Mouth
   - When food is chewed, salivary enzymes and carbohydrates begin digestion.

2. Stomach
   - Muscles in a process called peristalsis push the food down through the stomach.

3. Stomach
   - Emulsification of fat by bile (cholesterol) from liver/gall bladder and action of lipases from the pancreas.

4. Liver
   - A gland that produces enzymes which are stored in your liver and is essential for food digestion.

5. Pancreas
   - Many kinds of digestive enzymes are made here.

6. Small Intestine
   - Food is mixed with bile from your liver and mixed with secretions from the pancreas to be mixed and broken down for easy processing.

7. Large Intestine
   - Digestible food and processing of waste and dispersed.

8. Anus
   - Solid waste is released through anus or ‘to have your bowels’.

Digestion of protein & carbs

- Digestion begins in the mouth with chewing and activation of ptyalin and enzymes in raw food.
- Continues in cardiac & fundic regions of stomach (no peristalsis)
- Proceeds to pyloric region when HCl is sufficient and food is liquified
- Pepsin digests protein in this acid environment

Digestion of fats

- Digestion of fats begins in the mouth with chewing, activation of the enzymes in raw fats – raw butter, avocado, cold pressed olive oil – very helpful for proper digestion
- Continues in cardiac & fundic regions of stomach (before peristalsis starts)

Digestion in small intestine

- Fat digestion continues in the small intestine with emulsifying of fat by bile (cholesterol) from liver/gall bladder
- And with action of lipases from the pancreas
- Pancreatic amylases breaks down carbs
- Pancreatic proteases continue the digestion of proteins.
Digestion at the Brush Border

• Completed by enzymes secreted by healthy enterocytes on the villi of the duodenum
• Healthy enterocytes depend on a healthy mix of beneficial gut flora that line the small intestine
• Bad fats (processed vegetable oils) interfere with gut flora & bile production
• Low fats diets also interfere with fat digestion – Don’t be afraid of good fats – butter, olive oil, coconut oil

Saturated Fat is not bad for you!!!

The Role of Gut Bacteria

• Provide physical barrier
• Produce antibiotic & anti-viral substances, anti-fungal volatiles, protecting from pathogens
• Produce acids that lower pH which bad bacteria can’t handle
• Digest sugars, including lactose
• Abnormal gut flora (dysbiosis) →
  – Poor brush border
  – Multiple malnutrition deficiences (esp. iron)
  – Leaky gut syndrome ... and more

Dysbiosis (abnormal gut flora) can cause a variety of serious health problems!

Why?...

The Gut & the Immune System

• GALT (gut-associated lymph tissue) → Peyer’s Patches
  – interface with food
  – Major part of immune system (40%)
  – Depend on a healthy gut microflora
  – Example: Bifidobacteria activate synthesis of lymphocytes which produce immunoglobulins (IgA)
  – IgA destroys pathogens on all mucus membranes (part of Th1 T cell helper type)
  – IgA helps gut flora puts whole immune system out of balance, lets in unwanted microbes, undigested food particles, toxins → Th2 (humoral immunity) takes over and goes overboard → allergies, inflammation, autoimmunity

The Gut-Brain Connection

• “Vast majority of psychiatric patients suffer from digestive problems.”
• Malfunctioning gut is source of toxicity
  – Neurotoxic molecules formed
  – Nutrient deficiencies
  – Reduced ability to detoxify
• Brain malfunction
• Healing the gut is essential to restoring mental health

Find ‘Behavior’ on sitemap at www.MercyViewMeadow.org
Common Symptoms of Digestive Issues

- Bloating or belching after meals
- Burning in stomach after eating
- Fullness or heaviness after eating
- Nausea after eating or taking supplements
- Intestinal gas
- Indigestion
- Bad breath
- Diarrhea or constipation
- Itching around rectum
- Weak or cracked fingernails
- Skin break-outs or acne
- Iron deficiency
- Undigested food in stool
- Food allergies
- Various puzzling health problems
- Brain fog

What damages gut flora?

- Antibiotics – damaging to the immune system
- Steroid drugs damage gut flora and suppress immune system
- Diet high in refined sugars/carbs, low in fiber
- Additives
- Long term psychological or physical stress
- Physical exertion (excess)
- Too little sleep
- Alcoholism
- Pollution
- Exposure to toxins, heavy metals
- Ionizing radiation
- Chronic disease associated with poor gut flora
- Old age
- Contraceptive pills
- In babies, lack of normal gut flora from mother

Some specific things to avoid

- Carrageenan – see Cornucopia.org for more info.
- Glyphosate contamination

Diseases Associated with Poor Digestion

- Asthma
- Diabetes
- Osteoporosis
- Arthritis
- Hepatitis
- Eczema
- Acne rosacea
- Psoriasis
- Gallbladder disease
- Herpes
- Hives
- Hyperthyroid
- Hypothyroid
- Thyrotoxicosis
- Autoimmune disorders
- Lupus erythematosus
- Myasthenia gravis
- Pernicious anemia
- Celiac disease
- Sjogrens syndrome

Enzymes and Digestion

- Enzymes are complex energized protein molecules that do the work involved with all the processes of life – the Spark of Life
- They catalyze and regulate reactions in the body
- They are crucial to digestion
- Enzymes are delicate molecules that are easily damaged by toxins and excess heat
- Each enzyme is activated by a particular mineral or vitamin
- Living enzymes have vital principle or life energy that we don’t understand

Types of Enzymes

- Food enzymes
- Digestive enzymes
- Metabolic enzymes
- Lots of overlap…
Metabolic Enzymes

- Metabolism, the sum of the processes by which the body’s fuel is converted to energy, relies heavily on enzymes, one of the basic keys of life.
- There are thousands of enzymes in the body that carry on all the activities of building, maintaining, cleansing (detoxing), healing the body.
- Building & activating these enzymes requires a full complement of nutrients from natural foods
- Many trace minerals are needed in very small amounts

Food Enzymes

- Living (Raw) foods contain enzymes that begin digestion – amylases, proteases, lipases
- Cellulases – which assist to break down cellulose
- Cellulose provides structure to plants, but we can’t digest it – called “fiber.” Microbes in the gut feast on the fiber – providing the enzymes to digest it.
- Fermenting foods increases their enzyme content and provides healthy microbes (probiotics)
- Cooking foods destroys enzymes

Why are food enzymes important?

- Help digest our food – making more nutrients available for building
- Reduce our need to make digestive enzymes
- Conserve our digestive enzyme systems which gradually wear out with use
- Conserve our capacity to make the metabolic enzymes needed for health, detoxification, and healing
- Young people have a large reserve of enzymes in their tissues which help with digestion of cooked & junk foods
- Older folks have smaller reserves, so foods are digested less efficiently

Food enzymes from raw plant foods

- Tropical fruits high in enzymes – papaya, pineapple, banana, avocado, mango, dates, figs
- Also truly raw honey
- Germinated, inhibitor-free raw seeds
- Soaked & dried nuts
- Salad greens are low in enzymes
- Juicing or blenderizing raw greens allows higher enzyme consumption
- Lacto-fermentation of shredded veggies (sauerkraut, kimchi) increases enzymes, as well as other nutrients, adds probiotics

Enzyme-rich Salads

- Chop, dice or shred a variety of tender veggies/greens. Apple is nice, too.
- Dress with raw apple cider vinegar, extra virgin olive oil, and really raw honey
- Add something nutty – pine nuts, walnuts, sesame or pumpkin seeds
- Season as desired with good salt, pepper, and herbs
- Keeps well

The benefits of juicing/blending

- Easy way of consuming fresh fruits and vegetables
- Easy to digest
- Rich source of vitamins, minerals, enzymes, antioxidants
- Health boosting properties - increased energy, clearer skin
- Add ACV, honey, olive oil
- Cleansing and detoxification
- Speed recovery from illness
- Anti-aging
- Helps body resist cancer
- Fun to experiment
- Great to share with friends
Healthy Traditional Diets

• Included many raw foods
• Included raw animal products – meat, milk, eggs
• Made bone broths
• Used the organ meats
• Valued the fat, skin (fat-soluble activators)
• Often included fermented foods, rich in beneficial microbes and enzymes
• Often soaked or sprouted grains to activate enzymes and increase digestibility
• The smart kitchen-chef does the same.
• See WAPF Dietary Guidelines

Food Enzymes from raw & cultured animal foods

• Good quality raw milk, a maligned & misunderstood superfood
• Yogurt
• Kefir
• Crème Fraiche, Pima cream
• Pastured raw eggs – raw egg whites are fine when consumed with raw egg yolk (biotin in yolk more than balances biotin binders in egg white)

Raw meat –
• Kibbeh* (lamb)
• Steak Tartare* (French)
• Carpaccio* (Italian)
• Raw Salmon Salad*

*Recipes in Nourishing Traditions

Enzymes in Raw Milk

• Lipase – assist with proper digestion of fats
• Lactoperoxidase - Uses small amounts of H2O2 and free radicals to seek out and destroy bad bacteria
• Lactoferrin - Steals iron away from pathogens and carries it through the gut wall into the blood stream; stimulates the immune system
• Lysozyme – Kills bacteria by digesting their cell walls.
• White Blood Cells – Produce antibodies against specific bacteria and many other functions
• Other enzymes – Disrupt bacterial cell walls
• All destroyed by pasteurization

Digestive Enzymes

There are three main types of digestive enzymes
• Lipases – which serve to break down fats (lipids)
• Proteases (proteolytic enzymes) – which work to break down proteins – examples trypsin & pepsin
• Amylases – which breaks down starch (amylase)
• Disaccharidases – break down double sugars
• Stomach hydrochloric acid - essential for good digestion of proteins (GERD)

Some Enzyme Activities

• Amylases – digest carbs (salivary & pancreatic) along with dead white blood cells, are involved in anti-inflammatory reactions. Deficiency associated with asthma, diabetes, allergies
• Invertase, lactase, maltase – disaccharidases in the brush border that digest disaccharides – double sugars
• Proteases – dissolve most proteins that are not part of living cells (which are protected from lysis with inhibitors), such as protein in food, cellular debris, toxins in blood.
• Lipases – Poor fat digestion is associated with heart disease, obesity. Fat “blockers” interfere with digestion
• Polymorphic – adapting to digestive or metabolic needs

What causes low digestive enzymes?

• Cooked foods increase enzymes needs
• Processed foods
  – lack the vitamins & minerals needed to activate enzymes
  – tend to interfere with the activity of enzymes due to damaged fats - toxins
  – require more detox enzymes.
• Enzyme inhibitors in some foods
• Poor gut microflora – antibiotics, etc.
Enzyme Inhibitors

- Nuts, seeds & beans are richly endowed with enzymes, but they must be inhibited until planted
- Enzyme inhibitors in seeds tie up nutrients to preserve the seed until planting time
- These inhibitors interfere with digestion & shorten the lives of test animals
- Germination (soaking, sprouting) inactivates the inhibitors – few enzymes in sprouts, but most enzymes at ¼ inch sprout
- ‘Starch blockers’ are enzyme inhibitors – increase (waste) enzyme production! (Wheat germ is loaded with inhibitors)

What happens when foods are cooked?

- Enzyme action is destroyed
- Cooked proteins are harder to digest
  → incomplete digestion
  → absorption of protein fragments, allergies
- Cooked fats do not function as well
- Some vitamins are damaged or destroyed
- Many minerals are less available for use by the body
- The body struggles to make all the enzymes needed
- Body function suffers – ill health

Some benefits of cooking

- Some plant foods are easier to digest when cooked after soaking - beans, grains, high fiber foods
- Some plant foods contain toxins (cole family/cruciferous veg) that are degraded by cooking or fermenting
- Bone broths enhance digestion, full of minerals
- Most healthy traditional cultures used some cooked, some raw foods, & some cultured foods

Individual Variability

- People vary greatly in their response to foods and their nutrient requirements
- Some folks do better with cooked foods than others – better enzyme mix
- Some folks do better with vegetarian diet, esp. with eggs & dairy, some need more meat
- Pay attention to how your body responds
- If problems persist, get help from a knowledgeable wellness professional – see www.WAPFToledo.org/Health Practitioners

Repairing poor digestion

- Avoid toxins - detoxify
- Avoid nutrient depleted & damaged foods
  – White flour
  – Refined sugars, esp. fructose
  – Modern, refined vegetable oils
- Eat high quality, real food
  – Food as it comes from the plant or tree
  – Food from pastured animals
  – Food that is properly raised/fertilized
- Proper treatment of grains with soaking/sprouting
  – use organic, traditional grains (or avoid)
- Determine food sensitivities & avoid
- Treat parasitic, fungal, or bacterial infections

- Eat foods that support good digestion
  – Bone broths (homemade) – chicken feet, heads, egg shells esp. rich sources
  – Fermented foods – sauerkraut, kimchi, kombucha, kefir
  – Apple cider vinegar (raw)
  – Digestive enzymes may be needed - proteases, lipases, and amylases, hydrochloric acid
  – Example: Vitalzym
- Restore beneficial gut microflora
  – Living lacto-fermented foods
  – Probiotics, prebiotics
- Beware of excess fiber
### The Truth about Fiber & Elimination

- Fiber is food for gut microbes
- Too much can be irritating to the gut
- Gut microbes are the secret to a healthy elimination - magnesium (prunes) as adjunct
- Also vitamin C
- Don’t rely on bran & psyllium seed
- Get your fiber from real food

### The importance of good fats and protein foods

- Fats improve absorption, utilization of other nutrients
- Raw fats - butter, cream, extra virgin olive oil, coconut & palm oils, sesame oil (cold pressed), avocado.
- Omega-3 essential fats - as in high quality fish oils/cod liver oil, flax seed, chia seeds, hemp seeds, walnuts
- Omega-6 (nuts, sesame oil) to balance with omega-3 fats.
- Evening primrose oil, borage oil - sources of GLA (gamma-linolenic acid) May protect against cancer, inflammation
- Wheat germ oil - vitamin E complex
- Meats are excellent source of important nutrients - highly available - tenderize with long slow cooking, or cook very rare to preserve all nutrients
- Meat should be pasture-raised - source of CLA (conjugated linoleic acid) protective against cancer, better balance of EFA

### Adding Probiotics (Gut Microflora)

- A healthy gut is loaded with microbes
- They help with digestion
- They keep pathogens controlled
- Help to maintain health gut lining - helping to maintain healthy immune system
- Natural sources: yogurt, kefir, kombucha, sauerkraut, kim-chi
- Raw apple cider vinegar, raw whey – add to raw juices to increase digestibility

### Traditional Lacto-fermented Foods

- Sauerkraut
- Kimchi
- Pickles – cucumbers and other veggies
- Relish – corn, tomato
- Ketchup
- Salsa
- Chutneys

### Some Prebiotic Foods

- Jerusalem artichokes
- Onions, leeks
- Chicory
- Garlic
- Banana & other fruits
- Asparagus
- Maple syrup
- Resistant starch – cooked navy beans, cold potato

### Probiotics for persistent problems

- Natren’s Healthy Trinity [www.natren.com](http://www.natren.com)
- Binkult [www.binkult.com](http://www.binkult.com/)
- Probiotics in spore form
  - [MegaProbio](http://www.megasaprobi.com/)
  - [JustThrive](http://justthrive.com/)
- Restore [http://restore4life.com/](http://restore4life.com/) An earth-derived supplement, claims to restore the tight junctions
- Lots more info at [www.MercyViewMeadow.org](http://www.MercyViewMeadow.org) - find ‘digestive issues’ or ‘probiotics’ on site map
Priming your Gall Bladder

- Gall bladder disease & related digestive problems are very common these days
- To aid digestion of fats:
  - Eat whole foods – avoid commercial processed fats & oils
  - Eat plenty of good natural fats to trigger release of bile
  - Slow down, relax, and chew thoroughly – juice your veggies
- Eat enzyme-rich foods:
  - Raw foods – pineapple, banana, raw milk, raw honey
  - Lacto-fermented foods - sauerkraut, kefir, beet kvass
  - Take a teaspoon of raw apple cider vinegar in 2-4 ounces of water with meals
  - Or a teaspoon of Swedish bitters in water after meals

More mineral problems

- Chemical farming methods interfere with the uptake of minerals & have depleted the minerals in our soils & our foods
- Because of soil mineral depletion even organic foods are usually lower in nutrients that 50 years ago - unless the soil is remineralized and soil microbes are nourished
- High quality foods raised on fertile, remineralized soils don’t attract pests, are higher in minerals & other nutrients, are tastier, keep longer!
- BUT – they are hard to find!
- Use refractometer to test ‘brix’ levels

Minerals

- Minerals are absolutely necessary for body function
- Some minerals are needed in only trace amounts
- Mineral absorption relies on fat soluble activators – A, D, K2
- Be sure to include good fats in the meal along with juices
- Animals are God’s gift who turn grasses and herbs into nourishing food
- Vitamin D - sunshine, high quality cod liver oil, lard from pastured pigs
- Vitamin A - butter, egg yolk, liver & cod liver oil - true vitamin A found is only in animal foods
- Vitamin K2 - found in egg yolks, spring butter, animal fats, fermented foods, aged cheeses, natto

Mineral Sources

- Many enzymes have a mineral (or 2) attached - that’s why trace minerals are so important.
- Best sources:
  - High quality fruits and vegetables - organic and high brix
  - Butter from grass-fed animals
- Supplemental sources:
  - Celtic sea salt
  - Concentrace® in purified water
  - Superfoods
- Be sure to get good fats
- Be wary of calcium supplements – must be balanced with other minerals, esp. magnesium – whole food supplements best

Superfoods

- Fresh wheat grass
- Cinnamon - helps normalize blood sugar
- Ginger, fresh - aids digestion
- Lemon, including the skin - potent detoxifier
- Nutrient-dense sea vegetables:
- Kelp – iodine
- Chlorella - binds with heavy metals
- Spirulina – easier to digest
- Mushrooms - help boost the immune system
- Parsley, cilantro – detoxifiers, aid digestion
- Tomatoes, esp. cherry toms - important part of antioxidant defense in skin to protect from sun
- Nutritional yeast - high quality, minimal processing - source of B vitamins (not B12) and many minerals, such as chromium (diabetes) and silicon (strong bones and healthy joints)

Beware of “Health-washing”

- Avoid soy
- Avoid low fat
- Cholesterol is not an issue
- Cage-free, ‘natural’ is not pastured
- Organic milk is better, but not raw
- Organic cereals may still be highly processed
1. Eat whole, natural foods.
2. Eat only foods that will spoil, but eat them before they do.
3. Eat naturally-raised meat including fish, seafood, poultry, beef, lamb, game, organ meats and eggs.
4. Eat whole, naturally-produced milk products from pasture-fed cows, preferably raw and/or fermented, such as whole yogurt, cultured butter, whole cheeses and fresh and sour cream.
5. Use only traditional fats and oils including butter and other animal fats, extra virgin olive oil, expeller expressed sesame and flax oil and the tropical oils—coconut and palm.
6. Eat fresh fruits and vegetables, preferably organic, in salads and soups, or lightly steamed. ….

See handout

References
- Nourishing Traditions, by Sally Fallon
- Eat Fat, Lose Fat, by Sally Fallon
- The Body Ecology Diet, by Donna Gates
- Digestive Wellness, by Elizabeth Lipski (avoid soy)
- Gut and Psychology Syndrome by Natasha Campbell-McBride, M.D.
- www.MercyViewMeadow.org - go to sitemap, find ‘Digestive Issues’ and follow links (also ‘Magnesium,’ ‘Vitamin B12,’ ‘Cholesterol’)
- To see class notes go to WAPFToledo.org/click on ‘***’

Wishing you the best!
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