Why Detox?

*Tips and Tricks for Guiding Your Patients towards a Healthy Liver*

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Why Detox

• OBJECTIVES

• At the end of this presentation you will be able to:
  – **Identify** common toxins in our daily environment and their associated health risks.
  – **Discuss** how the body’s detoxification system works.
  – **Implement** dietary strategies for helping patients support the liver detoxification process and avoid future exposure to toxins.
What detox isn’t...
What IS detoxification?

- **Biochemical process** by which non water soluble compounds are transformed into water soluble compounds that are then excreted by the body through urine, sweat, or stool.

- **Benefit**: Protects body from adverse effects of external and internal toxins.
Detoxification: Basis of Drug Metabolism¹

• MERCK MANUAL

• Drug metabolism is also known as xenobiotic metabolism

• Living organisms modify pharmaceutical substances (xenobiotics) through special enzyme pathways

• This metabolism converts fat soluble chemical compounds into water soluble products the body can excrete.

• *The rate of metabolism determines the duration and intensity of a drug's pharmacological action.*
What is detoxification?

“Enzyme Pathways” = 2-Phase Process
Why Detox?

• Most people should be able to detoxify but
  an overload of toxins
  an undernourished body
  a compromised digestive system
all make for a less effective detoxification process

• Detoxification is nutrient dependent

• What is a “toxin”?  
  – Irritating substance that is disruptive to the proper functioning of our bodies
WHY DETOX?

Where do toxins come from?
Where do toxins come from?

• Exposure to 1000’s of chemicals every year
  – Pollution
  – Pesticides & herbicides
  – Plastics & Plasticizers (BPA)
  – Body care products
  – Household cleaning products
  – Flame retardants
  – Exhaust & cigarette smoke
  – Food additives & preservatives & artificial colorings etc.
  – Medications & drugs
  – Caffeine & alcohol
WHY DETOX?

What are the risks with these toxins?
Why Detox?

• Chemicals associated with many chronic diseases
  – Fibromyalgia & CFS
  – Diabetes
  – Parkinson’s & Neurological issues
  – Cardiovascular issues
  – Endocrine/hormonal issues
  – Cancer
  – Alzheimer's
  – Obesity
  – Depression
  – Overall malaise and poor energy
Environmental Working Group Study: “10 Americans”

*Umbilical blood study of 10 American born babies, showing 413 different chemical toxins*¹

- **Hormone disruption** was found to be associated with about 154 chemicals

- **Infertility**, which is on the rise in the United States, was associated with 186 chemicals found in the study

- **Immune system disruption**, which is also on the rise, was associated with 130 chemicals in the study

- **Neurotoxins** were associated with 158 chemicals
Sources of Toxins

• **AIR pollution**
  – Contributes to cardiovascular issue$^{3,4}$
    • Ozone can contribute to oxidative damage, which mutates your DNA and disrupts autonomic nervous system
  – WHO says air pollution contributes to premature death of 3 million people annually$^3$
Cellular effects of O₃.³
Sources of Toxins

• Agricultural
  – Atrazine: most widely used herbicide in the US\(^5\)
    • Endocrine disruptors: decreases testosterone, feminization\(^6\)
    • Increases gluconeogenesis
    • Increases inflammation
    • Disrupts hormone signaling
    • Increases a p450 enzyme that converts androgens to estrogens\(^7\)
Sources of Toxins

Agricultural:

• **Glyphosate** *(Roundup) herbicide*
  
  – Prevents formation of amino acids\(^8\)
  
  – Inhibits beneficial bacterial growth and promotes microbial colonization\(^8\)
  
  – Estrogenic properties: increases breast cancer proliferation\(^9\)
  
  – Found in urine of city folk who haven’t been exposed to agriculture\(^10\)

  – **Glyphosate & Non-Hodgkins Lymphoma (NHL):**\(^11\)
    
    • “In conclusion our study confirmed an association between exposure to phenoxyacetic acids and NHL and the association with glyphosate was considerably strengthened.” Int J. of Cancer
Why Detox?

• Pesticides
  – Linked to cancer
    • “Nonetheless, the available scientific evidence does strongly suggest that pesticides do cause cancer in both those who use the pesticides directly and those who are exposed because of applications others make.”
  – Linked to endometriosis
    • Extensive past use of environmentally persistent OCPs in the United States or present use in other countries may impact the health of reproductive-age women
PLASTICS

• BPA – common in can linings, plastic bottles
  – found in some dental sealants and fillings, medical devices, paints, epoxy adhesives and cash register receipts.
  – **Endocrine disruptors** – bind to hormone receptors in body and activate or block them.\(^{15}\)
  – Associated with Heart Disease\(^ {16,17}\)
    • “Higher urinary BPA concentrations are associated with an increased prevalence of coronary heart disease.”
PLASTICS

• **BPA & Phthalates** linked to lowered fertility\(^{18}\)

• **BPA** linked to childhood obesity\(^{19}\)
  
  – *Journal of the American Medical Assoc\(^{20}\):*
    
    “**Conclusions:** Urinary BPA concentration was significantly associated with obesity in this cross-sectional study of children and adolescents. Explanations of the association cannot rule out the possibility that **obese children ingest food with higher BPA content or have greater adipose stores of BPA.**”
Body/Hair care

- Cosmetics, shampoos, lotions, hair products, nail products, deodorants, soaps

- In the Environmental Working Group study
  - 168 ingredients that are known to be toxic in 12 personal care products specifically used by women on a daily basis.
  - 85 ingredients that are known to be toxic in 6 personal care products that are used by men on a daily basis.
  - http://safecosmetics.org
  - http://www.ewg.org/skindeep/

- Parabens, nitrosamines, octinoxates, 2-nonynoic acid
Cleaning products

• Solvents used to dissolve dirt and grime
  – Toluene, benzene, formaldehyde, phenol
  – Long term exposure
    • Leukemia, heart arrhythmias, nerve damage\textsuperscript{22}
Flouride

• May be associated with Thyroid issues
  – “When there is excess of fluoride in the body it can interfere with the function of the thyroid gland. Thus, fluoride has been linked to thyroid problems.”\(^{23}\)
Dioxins: Persistant Organic Pollutants

- By-products of industrial processes
- Chlorine bleaching of paper pulp, manufacturing of some herbicides and pesticides
- *Can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer*\(^{24}\)
- Issues with thyroid\(^ {24a}\)
- Most through food - mainly meat, dairy, fish, shellfish\(^ {24}\)
Our Food

- Processed
- Preservatives
- Additives
- Artificial colors & flavors
- Emulsifiers
- Bleaching agents
- Poor quality soil
- Genetically modified foods
- Alcohol
- Caffeine
- Food allergies, sensitivities
Our Food

• Dairy & Animal products
  – Hormones
  – Antibiotics
  – Pesticides in animal feed
  – Non-organic Cow’s milk contains insulin-like growth factor-1 (IGF-1)
    • Also promotes undesirable growth - like cancer growth and accelerated aging\(^{25}\)
    • IGF-1 is one of the most powerful promoters of cancer growth ever discovered for cancers of the breast, prostate, lung, and colon\(^{25}\)
Our Food

- **Artificial sweeteners**\(^26,27\)
  - Metabolic issues
  - Damaging to nervous system
  - Promotes bad bacteria

- **Refined sugars**

- **High fructose corn syrup**
  - Made using toxic solvents\(^28\)

- **Brominated vegetable oil (BVO)**
  - Central nervous system depressant and common endocrine disruptor\(^29\)
Why Detox?

Endogenous Toxins

– We create toxins all the time as byproducts from our normal metabolic functions
– Healthy body can eliminate them
– If we are missing nutrients or if we have an overload we cannot detoxify properly
– Liver cannot handle toxins and stores them in fatty tissue like brain and nervous system
THAT IS A LOT OF TOXINS!
Our body to the rescue!

- 6 organs of detox - working in concert
  - Liver
  - GI tract
  - Kidneys
  - Skin
  - Lungs
  - Lymphatic system

- **Liver** acts as a filter
  - Takes fat soluble compounds and turns them into water soluble compounds to be excreted in urine or stool
The Liver’s Role

• 7.5 cups of blood pump through liver every minute
• Metabolizes protein, fat, carbohydrate from diet
• Balances blood sugar
• Aids in hormone balance
• Filters viruses & bacteria from blood
• Produces 1 QUART of bile daily
• Integral to digestive function
Signs of a Struggling Liver

- Slow digestion
- Inability to digest fats
- Slow or sluggish metabolism
- Sugar cravings
- Irritable bowel issues
- Abdominal bloating
- Fatigue
- Aches and pains

- Foggy brain
- Migraines
- Hormonal issues
- Immune system issues
- Thyroid issues
HOW THE LIVER WORKS

Endotoxins
* end products of metabolism
* bacterial endotoxins

Exotoxins
* drugs, (prescription, OTCs, recreational, etc)
* chemicals
  - agricultural
  - food additives
  - household
  - pollutants/contaminants
* microbial

**PHASE I** [cytochrome P450 enzymes]

- **toxins**
  - nonpolar (lipid-soluble)
    - Reactions:
      - oxidation
      - reduction
      - hydrolysis
      - hydration
      - dehalogenation

- lipids (nonpolar) toxins stored in adipose (fat) tissue contribute to increased/mobilised toxin load with weight loss

- **Free Radicals**

- **Enzymes, Cofactors & Other Nutrients Used**
  - riboflavin (vit. B2)
  - niacin (vit. B3)
  - pyridoxine (vit. B6)
  - folio acid
  - vitamin B12
  - glutathione
  - branched-chain amino acids
  - flavonoids
  - phospholipids

- **Antioxidant/Protective Nutrients/Plant Derivatives**
  - carotenes (vit. A)
  - ascorbic acid (vit. C)
  - tocopherol (vit. E)
  - selenium
  - copper
  - zinc
  - manganese
  - coenzyme Q10
  - thiol(s) [found in garlic, onions & cruciferous vegetables]
  - bioflavonoids
  - silymarin

**PHASE II** [conjugation pathways]

- **Intermediary metabolites**
  - more polar, more water-soluble

- **Reactive Oxygen Intermediates**

- **Sulphation**
  - glutathione conjugation

- **Acetylation**
  - amino acid conjugation

- **Glycine**
  - taurine
  - glutamine
  - ornithine
  - arginine
  - methylation

- **N-acetylcysteine, cysteine, methionine are precursors**

**Excretory derivatives**

- polar (water-soluble)
  - serum
  - kidneys
  - bile
  - urine
  - faeces/stool

**Secondary Tissue Damage**
PHASE I: Cytochrome P450 Enzymes used

- Toxin is transformed into a “intermediate metabolite”
  - Oxidation
  - Reduction
  - Hydration
  - Hydrolysis
  - Dehalogenation

Essentially- making the toxic compound “sticky” so that something can be added to it.
We need nutrients as co-factors

- Riboflavin
- Niacin
- Pyridoxine
- B12
- **Glutathione**
  - Neutralizes free radicals
  - Glutathione S Transferase enzyme

- BCAA’s
  - Leucine, valine, isoleucine
- Folate
- Flavanoids
- Phospholipids
HOW THE LIVER WORKS

Endotoxins
*end products of metabolism
*bacterial endotoxins

Exotoxins
*drugs, (prescription, OTCs, recreational, etc)
*chemicals
- agricultural
- food additives
- household
- pollutants/contaminants
*microbial

**toxins**

PHASE I
[cytochrome P450 enzymes]

Reactions
oxidation
reduction
hydrolysis
hydration
dehalogenation

Enzymes, Cofactors & Other Nutrients Used
riboflavin (vit. B2)
niacin (vit. B3)
pyridoxine (vit. B6)
folic acid
vitamin B12
thiamine

more polar, more water-soluble

Intermediary metabolites

PHASE II
[conjugation pathways]

sulphation
N-acetylcysteine, cysteine, methionine are precursors

more polar, more water-soluble

Reactive Oxygen Intermediates

excretory derivatives

polar, water-soluble

Serum
Kidneys

Bile
Urine

Faeces/stool

lipid-soluble (nonpolar) toxins stored in adipose (fat) tissue contribute to increased/mobilised toxin load with weight loss

Antioxidant/Protective Nutrients/Plant Derivatives

carotenoids (vit. A)
tocopherol (vit. E)
selemium
copper
zinc
manganese
coenzyme Q10
thiols (found in garlic, onions & cruciferous vegetables)
bioflavonoids

Free Radicals

Secondary Tissue Damage
Phase II

- Enzymes convert the transformed “intermediate metabolites” into water soluble compounds for excretion
  - Sulfation
  - Glucoronidation
  - Methylation
  - Glutathione conjugation
    - requires glutathione s-transferase aka “GST”
  - Acetylation
  - Amino acid conjugation - makes it lipophilic
We need nutrients as co-factors

- Vitamin A
- Vitamin C
- Vitamin E
- Selenium
- Copper
- Zinc
- Manganese
- Silymarin
- Thiols
- Flavanoids
- Co Q 10
METHYLATION simplified

- Adding a methyl group to a substrate
- Cofactors include Folate, B6, B12
- Involved in modification of heavy metals, regulation of gene expression, regulation of protein function, and RNA processing

Methylation explained: [http://www.ceu-usa.com/courses/Wc001/test_drive/methylation_cycle.htm](http://www.ceu-usa.com/courses/Wc001/test_drive/methylation_cycle.htm)

- MTHFR gene - means we don’t detoxify well
Why Detox

- **Metallothioneins**: intracellular, low molecular, low molecular weight, cysteine-rich proteins.
  - Large quantities are synthesized primarily in [liver](#) and [kidneys](#).
  - Support Oxidant damage, and metabolic regulation
  - Have metal-binding and redox capabilities
  - Their production is dependent on availability of the [dietary minerals](#), as zinc, copper and selenium, and the amino acids [histidine](#) and cysteine.
Starting your clients on a detox

• Almost everyone/anyone can benefit
• Do you have a client with:
  – Diabetes, hormonal issues, thyroid issues, neurological issues, trouble losing weight?
• Those who should not detox:
  – Pregnant
  – Sick – even the flu
  – In cancer treatment
  – Those on large doses of medication
  – A simple food detox is ok
My Protocol
www.marypurdys10daydetox.com:
Self-managed and online

Total of 14 days:

• 4 day prep
  – Getting ready

• 1\textsuperscript{st} Phase = 3 days
  – Cutting back and reducing certain foods
  – Beginning to increase other foods

• 2\textsuperscript{nd} Phase = 7 days
  – Complete elimination of certain foods
  – Focus on whole foods, “clean” eating

All supported with high quality supplementation
Where to begin? – Preparing Yourself
Prep Phase: 4-7 days

Notice:
• What you are eating
• How you are feeling
• How food affects you

• Check in with yourself:
  – Where do you feel out of balance?
  – How is your stress?
  – What do you crave?
  – Write down what you eat in a day
Preparing yourself:
Detox can be challenging

Begin:
• Reading labels
• Noting what is in your kitchen/pantry
• Drinking more water
• Taking supplements or continue them
• Bring out the blender!
• Tell your friends and family for support
Preparing yourself:
Detox can be challenging

- Go grocery shopping
- Take note of challenges a day might present
  - Office meetings
  - Dinner with friends
- Research restaurants/cafes in the neighborhood that are detox friendly
  - Practitioners can also provide for the patient
1st Phase: 3-7 days: LIMIT
2nd Phase: 7-14 days: ELIMINATE

Limit/eliminate:

- Sugar
- Dairy
- Alcohol
- Caffeine
- Processed & fried foods
- Refined carbs and ALL gluten
- Refined oils: soybean, corn, canola, safflower
- Animal meats –allow ONLY organic eggs and wild fish
- Chemicals/cigarettes
- Anything you cannot pronounce
- Some detox diets eliminate eggs/soy/corn
  – I allow but it must be in whole form and organic
REPLACEMENTS are KEY

- **Sugar** - *Use Grade B maple syrup, stevia, dates, dried fruits, vanilla, coconut, cinnamon*

- **Dairy** - *Try avocado, nutritional yeast, Amande yogurt, Alternative milks: hemp, almond, coconut or make your own with nuts and water in blender*

- **Caffeine/coffee** - *Try green or white tea, – kukicha, yerba mate, herbal teas, Teechino*

- **Alcohol** - *Try bitters in seltzer or kombucha*
REPLACEMENTS

• For Processed foods - Explore your supermarket
  – Nuts and seeds instead of chips
  – Mary’s Gone Crackers
  – Flackers

• For Refined carbs and Gluten (wheat, rye, barley)
  – Mochi squares
  – Quinoa, Millet, Kasha
  – Spaghetti squash instead of pasta
  – Zucchini for pasta
Increase:

Whole Foods  ❖ Fiber is key!

- Focus on whole fruits and veggies - organic
  - The brighter the better! Greens Greens Greens!
  - **Cruciferous**: broccoli, cauliflower, kale, cabbage, arugula
    - “Glucosinolates” target Phase 1 & Phase 2\(^{30}\)
  - **Berries**: blueberries, pomegranate, cranberries
    - Ellagic Acid is protective\(^ {31}\)
  - **Seaweed**: Toss in soups, salads
  - **Burdock, celery**: increase urine output
  - **Beets**
Increase:
Whole Foods  ❖  Fiber is key!

- SOME IDEAS
  - Have as snacks
  - Make salads
  - Stir fries
  - Roasted
  - Throw veggies in a smoothie
  - Add to soups
  - Make into chips
Increase:
Whole Foods  ★  Fiber is key!

- **Plant sources of protein**
  - Experiment with **Beans & Legumes**
    - Cannellini, lentils (green, red, brown), navy beans, pinto, black beans, mung beans, adzuki beans
    - Provide recipes: Dips, chili, soups, salads,
  - **Nuts & seeds**: brazil, pistachio, walnuts, almonds, etc
    - Chia, flax, hemp
  - **Unprocessed soy** only:
    - Tempeh in small amounts
    - Miso
  - *If* doing animal products: ORGANIC only
    - No animal products in 2nd Phase
Increase These foods:

- **Whole Grains (fiber!)**
  - Kasha
  - Teff
  - Millet
  - Quinoa
  - Sprouted corn tortillas —

  *Recipes are key here:* savory and sweet are both great

- **Healthy fats:** Avocado, olives, coconut, nuts/seeds
  - Experiment with new oils
    - Sesame, avocado, walnut, coconut,
  - Coconut milk for cooking
Increase These foods:

- Herbs and spices!
  - Cilantro, (binds to heavy metals) basil, dill, parsley,
  - Rosemary contains “carnasol”: Detoxifying enzyme
  - Turmeric, curries, garam masala
    - Increases glutathione s transferase\(^{32}\)
    - Protects against oxidative stress\(^{33}\)
  - Onions, Garlic – contain sulfur
    - supports production of glutathione\(^{34}\)
  - Ginger
  - *Flavor is key*
Increase These foods:

- **Fluids!**
  - Water
  - Green/white teas,
    - Compounds ECGC in green tea help to support phase I & Phase II detox process
    - Induces Phase II glucoronidation & GST enzymes
  - Herbal infusions
    - Nettle/burdock
  - “Detox” teas
  - Seltzers
  - Kombuchas
  - Coconut water
Increase These foods:

- Condiments will help
  - Mustards
  - Miso paste
  - Nut butters
  - Tamari sauce
  - Karam’s garlic sauce
  - Sauerkraut – Try Firefly Kitchen!
    - Fermented foods in general are great.
  - Coconut milk
  - Vinegars
  - Nutritional yeast
What detox is... plenty of FLAVOR!

Sample meals

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Snack</th>
<th>Lunch</th>
<th>Snack</th>
<th>Dinner</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Image of hummus]</td>
<td>Hummus &amp; raw veggies</td>
<td>Hearty salads with lots of veggies, plant protein (tofu, tempeh, beans, lentils), roasted nuts</td>
<td>[Image of fruit and nuts]</td>
<td>Brown rice or quinoa</td>
</tr>
<tr>
<td>[Image of rice]</td>
<td>Rice cakes &amp; nut butter or avocado</td>
<td></td>
<td></td>
<td>Stir fried veggies (cabbage, carrot, broccoli, onion,) &amp; chick peas</td>
</tr>
<tr>
<td>[Image of smoothie]</td>
<td>Fruit &amp; Nuts!</td>
<td></td>
<td></td>
<td>Ginger &amp; garlic</td>
</tr>
</tbody>
</table>
Dessert?

- **Smoothie:** cocoa powder, frozen banana, dates, nut butter, “milk” in blender
- **Rice pudding:** sweet brown rice, almond butter, coconut shreds, vanilla, maple syrup “milk”
- **Chia Seed pudding:** ¼ cup chia & cup of almond milk and add nuts/seeds, vanilla, coconut, cinnamon, maple syrup
- **Pecan Date Bon Bons:** pecans, dates, miso, coconut, cinnamon
Juicing?

- Including as part of detox is great
- Try as first thing in the morning or between major meals as snack
- **Optional:** One day of just juicing, diluted liquids
  - Only on a stress free day
Additional lifestyle support

- Sleep
- Sauna
- Breathe & chew
- Slow down & De-stress
- Exercise
IDEAS for increased compliance

• Grocery list
• Smoothies
• Easy Soups & Stews recipes
• **Resources:** restaurants, juice bars, etc
• Vitamix /blender
• **Support:** Offer a group listserv, FB page or regular email access during the program
SUPPORTIVE SUPPLEMENTATION

• Ensures clients are meeting all their nutrient needs
• Easy vehicle for liver supportive compounds
• Daily dose of Phase I & Phase II supportive compounds
• Necessary for people in need of comprehensive liver support.
• Easily digestible protein
**SUPPORTIVE SUPPLEMENTATION**

**FORMULATIONS**
- Protein
- Spectrum of vitamins and minerals
- Milk Thistle
- Turmeric
- Artichoke: glutathione
- Amino acids
- Green Tea Extract
- N-Acetyl Cysteine
- Dandelion
- Broccoli extract

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**Supplement Facts**

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<tr>
<th>Serving Size 1 capsule</th>
<th>Servings Per Container 60</th>
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<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>% Daily Value</th>
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<tbody>
<tr>
<td>Biotin 50 mcg</td>
<td>17%</td>
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<tr>
<td>Calcium Glucarate 50 mg</td>
<td>5%</td>
</tr>
<tr>
<td>Choline Bitartrate 200 mg</td>
<td>*</td>
</tr>
<tr>
<td>Milk Thistle (Silybum marianum) Extract 200 mg</td>
<td>*</td>
</tr>
<tr>
<td>yielding Silymarin 160 mg</td>
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<tr>
<td>L-Methionine 100 mg</td>
<td>*</td>
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<tr>
<td>Turmeric 80 mg</td>
<td>*</td>
</tr>
<tr>
<td>N-Acetyl Cysteine 50 mg</td>
<td>*</td>
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<tr>
<td>Inositol 25 mg</td>
<td>*</td>
</tr>
<tr>
<td>L-Glycine 25 mg</td>
<td>*</td>
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<tr>
<td>DIM® (A patented enhanced bioavailability complex of starch, diiodolymethane, Vitamin E as d-alpha tocopheryl succinate, soy phosphatidylcholine, silica) 25 mg</td>
<td>*</td>
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<tr>
<td>Alpha Lipoic Acid 20 mg</td>
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</tbody>
</table>

* Daily Value not established.

Other ingredients: vegetable cellulose, vegetable stearate, rice flour.

Contains: Soy.

This product is vegetarian.

No Citrus, No Corn, No Gluten and No Yeast.
Probiotics

- **Intestinal Ecosystem needs support during detox**
  - 10 trillion bacterial cells in intestine
    - (1 trillion human cells in body)
  - They protect our body from internal/external toxins
  - Support immune system, moderate inflammation
  - Metabolize carcinogens,
  - Make B vitamins,
  - Produce butyrate & short chain fatty acids that nourish intestinal cells &
  - Ferment non digestible fibers to help increase nutrient absorption
    - Fermented foods also important
Milk thistle: silymarin

• Extract from flavanoids\textsuperscript{36}
  – Increases glutathione synthesis
  – Prevents depletion of glutathione
  – Protects the liver from damage
  – Acts as an antioxidant
  – Increases rate of liver tissue regeneration
  – Generally considered to be safe.

• \textit{Silymarin has been shown to decrease fasting plasma glucose levels in patients with insulin-dependent diabetes associated with cirrhosis.}\textsuperscript{37}
Quick Case Study

- CK – Female Diabetic patient – 57yo
  - Last fall 2012: HgAic: 9.7
  - Slowly making changes over the past year
- Pre - Detox: 10 units of insulin before bed
  - Fasting: 126, 111, 142
  - She started Detox in mid/late October
- Post Detox: 8 units of insulin before bed
  - Fasting: 84, 95, 92, 88, 75
  - As of 11/21/13: HgAic: 6.1
References


References


13. [http://well.blogs.nytimes.com/2013/11/05/pesticides-linked-to-endometriosis/?_r=0](http://well.blogs.nytimes.com/2013/11/05/pesticides-linked-to-endometriosis/?_r=0)


References


References


Thank You!

www.NourishingBalance.com
www.MaryPurdys10DayDetox.com
FACEBOOK: Nourishing Balance
Twitter: MaryPurdyHere
www.BlogTalkRadio.com/MaryPurdy

Questions?