“Polyphenols vs. Lectins”
How they interplay with Health,
Become a Polyphenol Phenom!

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Polyphenols vs. Lectins, what are they?

- A Lectin is basically a carbohydrate (sugar) binding protein. Macromolecules that are highly specific for sugar moieties (part of a group). Also known as “phytohemagglutinins”. First noted 1888.
- Polyphenols (polyhydroxyphenols) are molecules of natural and sometimes synthetic organic chemicals. Very unique, containing many subsets. This term is thought to have been around since 1894.
  - (Wikipedia 2017)

Let’s go a touch deeper...

- Lectins – in chemistry – do not possess enzymatic activity. They bind to carbohydrates which is usually part of a fat or protein. They can play an important role in the immune system, including auto-immune. ("Glycans in the immune system and The Altered Glycan Theory of Autoimmunity". J Autoimmun. 57 (6): 1–13).
- Lectins are used for blood typing useful in medicine.
- They have been ostracized by on-line sites with misinformation. But! (for example) a lectin from bananas inhibits HIV-1 in vitro. ("A Lectin Isolated from Bananas is a Potent Inhibitor of HIV Replication". Journal of Biological Chemistry. 285 (12): 8646–55).
Hang in there...there's more

- Lectin understanding: they interact with sugars and proteins. Which can be valuable in medicine/food, but at times, scary because of use in biochemical warfare (ricin) and even studies of cell death.

- Foods with high concentrations of Lectins (i.e. cereal grains) may be harmful if consumed in excess or improperly cooked. Poorly affecting immune system, nutrient deficiency, and degeneration of epithelial cells of the intestinal lining (leaky gut).


Last but not least on Lectins...

- Lectins are in many foods, even seeds, (lectin thought to help seeds germinate) and certain nuts.

- Lectins are considered anti-nutrient. Similar to anti-bodies. Too much lectins in the diet, we notice diarrhea, nausea, bloating, and vomiting.

- This can translate into a “leptin (a hormone in the gut) resistance” possibly being responsible for obesity in humans with high leptin.

Quick quiz

• The terms “Lectins and Polyphenols” have been around since what year(s)?
  1. 1950’s
  2. As early as 1888.
  3. The minute this webinar started.

• Answer is 2, Lectins 1888 and Polyphenols 1894.

Polyphenols begin to make sense...

• Polyphenols belong to the plant kingdom mostly. Contain pigments and are valuable in phyto-therapy (herbology) and nutrition. Most notably the tannins.
• Found in leaf, bark, flower, and fruit.
• High levels in plants - explain how some woods are naturally preserved against rot!
• Examples of them? EGCG (green tea), pro-anthocyanidins (grape seed, pine bark) catechins (dark chocolate), ellagic acid (red raspberry), etc.
Why is this relevant?

• Simply makes sense to limit “Lectins”. But since Lectins are in many foods, nature provided ortho-molecules called “polyphenols” that help keep our balance. They are said to repair damage from too many lectins.
• Many herbs contain soluble polyphenols (astringents) and even in Ayurvedic systems they are a source of traditional remedies.

Polyphenol phenomenon?...depends on gut health.

• Contain a class of compounds known as “flavonoids”.
• Research is exploding here for cognitive health, nutrition, and herbology. Ginkgo Biloba being the latest.
• Most flavonoids are poorly absorbed. But good news “the micro-biome (good bacteria in our gut)” can metabolize it, which allows flavonoid byproducts to now enter the blood brain barrier.
• In other words, we may not be able to digest Ginkgo directly, but our microbes can (if in balance of course).
• It takes good guts to be healthy!
Love those probiotics!

• Recap: it is critical that we maintain a healthy micro-biome to get our polyphenols from foods/herbs. If they do, let’s see what polyphenols can all do…..

• Polyphenols help the health of the vascular system, regulate blood pressure, keep inflammation in control, and even brain blood flow. (Cell 2008)

• Blueberry’s – evidence suggests, to provide polyphenols (flavonoids), it reduces toxic exposure to the brain. Also green tea (EGCG) shown to reduce damage in neural tissues and increase glutathione production. (J. Agricultural & Food Chemistry 2013)

Quiz quickie

• We know to limit lectins, even though it is in many foods, but what can help this hidden danger with the help of our probiotic friends?
1. Donuts, cereal, and toasted sugary treats.
2. Fish, cheese, and all dairy products.
3. Polyphenols like Ginkgo Biloba, Green Tea, Raspberries, even Dark Chocolate.

• Answer is 3.
Not through yet...

• Human studies – one study found frequent consumption of polyphenol rich foods (fruits/veggies) reduced risk of Dementia and Alzheimer’s (Neurology 2007)
• Another study of 10 years, found higher polyphenol consumption resulted in superior cognitive outcomes (Amer. J. of Epidemiology 2007)
• 16,000 humans age 70 or older. Greater intake of blueberries delayed cognitive aging by 2.5 years (Annals of Neurology 2012)
• Polyphenol rich pomegranate alleviates tissue inflammation and hyper-cholesterolemia. (J.Metabolism Clinical & experimental 2011;60:499)
• Polyphenols raise glutathione (tripeptide – the little molecule that could. Suboptimal levels implicated in everything) levels. (A. J. Clinical Nutrition 2005).
• Berries, currants, cranberries, grapes, apples, green tea, dark chocolate, etc.

Avocado seed a polyphenol phenom!

• Avocados - 70% of the antioxidants are found in the seed. These antioxidants have the power to neutralize free radicals, which are linked to health issues. Avocado seed contains polyphenols similar to the ones found in green tea (EGCG).
• The best way to use avocado seed: grind into a powder and add to sauces, dressings, or smoothies. (To avoid ruining your blender or food processor, especially if it’s not a high speed blender or powerful food processor, dry seed in a plastic bag and crush with a hammer first).
• You can also add it to your facial mask or scrubs as an exfoliant or make avocado pit tea.
Hop on over (Humulus lupulus)

- According to a new animal study conducted at Oregon State University (OSU; Corvallis, OR). Researchers found that xanthohumol, a prenylated flavonoid found in hops, significantly decreased plasma levels of glucose, total triglycerides, total cholesterol, and monocyte chemoattractant protein-1 (MCP-1) in mice consuming a high-fat diet.

  “This is the first time we’ve seen one compound with the potential to address so many health problems,” said Cristobal Miranda, PhD, lead author of the study and research assistant professor at OSU’s Linus Pauling Institute. “Those were very dramatic improvements.”

What else can polyphenols do?

- Researchers in the United Kingdom have published new study result. Suggesting consumption of a diet high in flavonoids (polyphenols) is associated with lower fat mass in women.

- The registry study included more than 2,700 healthy British women, and found that several particular flavonoids showed especially strong associations with reduced fat mass.

- So it goes on.....
Sources of polyphenols expanded...

- There are too many foods and supplements to mention but let's just capture a few awesome sources of polyphenols.
- Ready? Then take note!

Grape seed and Pine Bark
Powerful polyphenol

- Grape seed extract and pine bark derived from grape seed and maritime pine bark. Studies have shown that the proanthocyanidins are much more powerful antioxidants than other popular choices.
- Proanthocyanidins are similar to compounds in bilberry. They appear to provide antioxidant protection to the nervous system.
- Grape skin contains anthocyanins that have been linked to maintaining healthy cardiovascular function.
- Along with vitamin C and even grape skins provides a powerful polyphenol.

Ginkgo Biloba

- Ginkgo is a powerful free radical scavenger. It helps protect blood vessels and optimizes the amount of oxygen supplied to brain cells. It may also help support blood flow to the extremities.
- Promotes optimal blood circulation and oxygen to the brain.
- Supports memory and concentration functions.
- Helps protect blood vessels.
Hops (Humulus lupulus)

• Hops has a calming effect on the nervous system and is a common ingredient in products used to promote restful sleep. It has nervine properties. Hops contains xanthohumol, which possesses antioxidant properties.
• Helps calm and support the nervous system.
• May promote restful sleep.

Last, the Mother of All Polyphenols! Get in the mix!

• Mangosteen fruit concentrate and pericarp extract, Concord grape fruit concentrate, red grape fruit concentrate, blueberry fruit concentrate, red raspberry fruit concentrate, red grape skin extract, wolfberry/goji fruit extract, açai berry concentrate, pomegranate fruit juice concentrate, sea buckthorn fruit extract, red grape seed extract, green tea leaves extract and apple fruit extract.
• KA-BOOM a daily must!
Conclusion:

• Lectins have gotten a bad rap rightfully so, and it is very important to limit the amount of foods consumed that are high in them.
• Too much can interfere with the intestinal lining (disturbing the microbiome). Although tough to avoid, there are food molecules known as “polyphenols” that counter this onslaught.
• Increasing intake of polyphenols just makes perfect sense, including but not limited to supplementation.
• The research is growing by leaps and bounds on polyphenol rich plants and herbs!

Thank you

• Although this topic is intense, hopefully you can appreciate the value of knowing what these molecules can do.
• We have the solutions to the standard American die-t. Lol.
• Reduce the Lectins, increase the polyphenols and become a POLYPHENOL PHENOM!
• God bless.