February 2019 - Mid-Month Bonus Newsletter

Thank you for subscribing to this newsletter from the Personalized Lifestyle Medicine Institute. Enjoy and share this information, which is for educational purposes only and is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always consult with a qualified healthcare professional when you are in need of advice regarding a medical condition.

In this issue: Nutrient of the Month: Resistant Starch; Resource: PubMed; French Study Reveals Troubling Data Linked to Convenience Foods; Registration is Now Open for Two PLMI Events in 2019

Nutrient of the Month: Resistant Starch

How do animals like goats, bison, and wild horses survive on grasses in the wild? They have multiple stomach chambers that digest these modest foods in stages, each time extracting more nutrient value. In humans, foods that contain soluble dietary fiber are somewhat analogous for us. First, they are partially broken down in the stomach, then more finely processed in the small intestine, and finally, incompletely-digested components are happily fermented by the microbial communities colonizing our lower digestive tract (our gut microbiome) to produce valuable short-chain fatty acids that nourish the rapidly-dividing cells lining our intestines.

Resistant starches are a special example of this stepwise process, as their molecular structures contain chemical bonds that resist being broken down into simple carbohydrates during digestion, thanks to the presence of relatively high amounts of amylose or amylopectin. While a typical carbohydrate provides 4 kilocalories of energy per gram, resistant starches provide less caloric energy up-front (generally around 2 kcal/g), leaving plenty to enrich our gut microbiome and help it thrive. This gradual digestion and partial use as microbiome food conveys slow-energy release and appetite-satisfying qualities upon resistant starch, both of which can be useful in controlling weight and the glucose and insulin metabolic response.

Resistant starch occurs naturally in foods like plantains, buckwheat, raw oats, barley, raw potatoes, beans and pulses, rice, corn (especially "waxy maize"), ‘al dente’ pasta, unripe bananas, and wheat. It is also increasingly available in manufactured forms that capitalize on foods’ native soluble fibers; these may be labeled as “high-amylose starch,” “amylopectin-rich starch,” “modified resistant starch,” or other such names.
Because cooking can increase the digestibility of and reduce the resistant starch contents of some of these food sources (including wheat, potatoes, corn, and oats) it is important to prepare and use them in ways that preserve resistant starch. Resistant starch in cooked beans and pulses appears to be relatively stable, and manufactured resistant starches will generally be accompanied by directions for appropriate use. Buckwheat (from the rhubarb family rather than the wheat/rice grain family) is especially promising as a gluten-free source of resistant starch that can potentially substitute for gluten-containing ingredients in baked goods or pasta.

While more common starches can negatively impact glucose and insulin metabolism, resistant starch has shown some interesting properties:

- can lower cholesterol and triglyceride levels
- was shown to improve body composition and risk factors for cardiometabolic disease in a population with a prevalence of metabolic syndrome even higher than that of US in general
- compared to normal flour, reduced food intake over the day while lowering insulin levels
- improved glucose and insulin dynamics in type 2 diabetics
- in overweight people, beneficially influenced levels of glucose as well as factors related to satiety, the feeling of satisfaction after a meal

While these metabolic actions are impressive, their subsequent effects are equally important: improving the composition of the microbiome and modulating cell-to-cell communications throughout the body that can influence the immune response and the body’s level of oxidative stress. Because resistant starch is fermentable (a key to its health benefits), it may take time for one’s digestive tract to get accustomed to this dietary fiber, and some people may experience minor temporary gastrointestinal discomfort. It should be noted that the use of antibiotics can decrease the fermentation of resistant starch (and other soluble dietary fibers) and thereby reduce its benefits to the microbiome and intestines.

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**Resource: Putting a Polish on this Gem of Knowledge**

The PubMed open database of medical and scientific literature is one of the National Institutes of Health’s gems, providing access to many millions of published research articles in biochemistry, informatics, toxicology, psychology, immunology, and other areas of knowledge. Among the features in this set of databases-within-a-database are:

- TOXNET’s detailed compilations of known toxic effects of chemicals (including nutrients)
- The dbSNPs database of gene variants (not only single-nucleotide polymorphisms, despite the name)
- One aimed at understanding drug-related liver toxicity
- The MetaMap system of data-mining protocols increasingly employed by Big Data to understand phenome-genome-exposome relationships
- The wondrous TOXMAP, providing information on toxin releases and mapping toxic sites in the US
- Many others from the National Library of Medicine’s electronic resources

Amidst this wealth of information, it can be easy to find a bit of desired information while missing a lot, and taking some time to understand how concepts are organized can help fine-tune your efforts. The contents of journal articles are indexed and accessed through the MeSH (Medical Subject Heading) standardized system of nomenclature that defines and delineates concepts for easier capture in literature searching.

Browsing through MeSH categories, it is possible to view the thesaurus-style tree view of ascending and descending layers of naming; for example, the Phenomena and Processes subcategory can be broken down into Physical Phenomena, Metabolism, Immune System Phenomena, Geographicals, and others, each of which is parsed into
finer and finer terms. Adiposity, for instance, can be found under Body Fat Distribution, in turn found under Body Composition, which is in turn one of many subjects under Metabolism. Each MeSH is defined in its own page; for example Psychological Resilience is: "The human ability to adapt in the face of tragedy, trauma, adversity, hardship, and ongoing significant life stressors."

As the MeSH system must be constantly updated with new research findings and terminology, the National Library of Medicine provides online learning opportunities for better understanding the naming conventions in use and more efficiently accessing the information you want—though it will always be fun to “fall down rabbit holes” of unexpected information acquisition!

Would You Eat These 'Conveniences' If You Knew?

The French are understandably proud about their garden-to-table tradition of small farms and organic foods. However, a study of over 40,000 middle-aged and older French adults found that, even in this relatively health- and fresh food-conscious population, consumption of highly-processed convenience foods is becoming fairly common—especially among poorer people. These foods, including energy drinks, instant soups and noodles, chicken nuggets, ready-to-eat meals, and other pre-packaged meals and snacks, constituted around 1/7 of total food weight for study participants, yet comprised almost 1/3 of their total caloric intake. Researchers discovered that each 10% increase in consumption of these foods resulted in around 14% increased risk of early death, mainly from cancer or cardiovascular disease. Researchers hinted that additives, high-temperature processing methods, and packaging materials may contribute to these findings. Studies like these reveal that socio-economic forces increasingly factor into poor food choices that negatively impact healthspan—and it is clear that the list of less-than-nourishing 'junk' foods is expanding rapidly.

JAMA study: https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2723626

2019 PLMI Events - Registration is Open!

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Personalizing Nutrition Therapy in the Age of Lifestyle Medicine
Compelling Evidence, Breakthrough Science, and a New Era of Clinical Care

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SPRING 2019 PLMI PARTNER EVENT

**Mastering the Implementation of Personalized Lifestyle Medicine**

**Synchronizing Metabolic Rhythms: A Critical Tool for Clinical Success**

April 26-27, 2019

W Chicago - City Center

Click [HERE](http://example.com) to learn more about the program and speakers. Use this [LINK](http://example.com) to register.

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