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Riordan Clinic is a world-renowned, academic medical center that has led the world in integrative oncology and complex chronic illness care since 1975. The Riordan Clinic was established as a 501 (c)(3) non-profit organization with missions in research, provider education, and patient education. The Health Hunter Newsletter has been published since 1986 as an educational resource to providers and patients.



Balancing Women's Health and Hormones

Balancing Act: Supporting Estrogen Metabolism for Hormonal Health



AUTHOR

Dr. Stacy Dunn,
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Estrogen is a vitally important hormone responsible for supporting bone, cardiovascular, cognitive, and reproductive health. However, as is true with all hormones, balance is key. Creating healthy hormonal balance is crucial for good health, yet is increasingly difficult given modern processed diets, sedentary lifestyles, and everyday exposures to endocrine disruptors such as xenoestrogens, (synthetic chemicals that mimic estrogen). And as our estrogen exposure increases, our risk for estrogen-associated conditions such as fibroids, endometriosis, PMS, polycystic ovarian syndrome, breast cancer and uterine cancer, increases as well.

Estrogen and Estrogen Metabolism
Estrogen is a steroid hormone produced by both men and women. The term 'estrogen' collectively describes the three major types of estrogen: Estrone

(E1), Estradiol (E2), and Estriol (E3). Estrone is the weakest of the three types of estrogen. It is produced by the adrenal glands, fatty tissues, and ovaries, and is the predominant form of estrogen present after menopause. Estrone can convert to Estradiol if a stronger estrogen is required by the body. Estradiol is our most potent estrogen and is produced primarily in the ovaries. It is the predominant form of estrogen during our reproductive years and is the form of estrogen most commonly prescribed for hormone replacement therapy (HRT) for menopausal symptoms. Estriol is the weakest of the three estrogen types and is produced during pregnancy to help prepare the body for childbirth.

Estrogen, whether it was made by the body, derived by a plant (phytoestrogen), or developed in a lab, undergoes detoxification in the liver to break it down and remove it from the body. These phases of detoxification are a bit technical - but really interesting and super important, so stay with me! *Continued on page 2*

THERE ARE 3 PHASES OF ESTROGEN METABOLISM.

The first 2 phases occur in the liver.

PHASE 1 (called hydroxylation) uses enzymes to transform estrogen into intermediate compounds, or metabolites. These metabolites are highly reactive and have the potential to cause oxidative and DNA damage. There are 3 possible metabolites:

- **2-OH:** considered a “good” or protective metabolite and less estrogenic. (Cruciferous veggies, exercise, isoflavones, and green tea promote this pathway).
- **4-OH:** considered a “bad” metabolite that can cause permanent DNA damage and has the strongest estrogenic effect. (Xenoestrogens such as PCBs and dioxins selectively activate this pathway).
- **16-OH:** considered a “bad” metabolite that is linked to an increased risk of estrogen-related health conditions including breast cancer.

PHASE 2 Detoxification neutralizes these metabolites, creating water-soluble compounds that can then travel into the kidneys or intestines for excretion. This process of neutralization (called conjugation) is supported by b-vitamins and sulfur rich foods such as garlic, onions, cruciferous veggies, and eggs.

PHASE 3 involves eliminating these now water-soluble compounds through the kidneys and intestines. Gut health is essential for this process, as dysbiosis can lead to reabsorption of estrogen - after your liver has worked so hard to prepare it for elimination! Dysbiosis is an imbalance in the gut bacteria that often occurs as a result of stress, a poor diet, and antibiotic use.

Supporting Estrogen Metabolism for Hormonal Health
Dysbiosis leads to elevated levels of beta glucuronidase, an enzyme in the gut which breaks apart the conjugated, water-soluble estrogen so it cannot be excreted and is, instead, reabsorbed back into circulation.

FACTORS CONTRIBUTING TO ESTROGEN IMBALANCE

There are 3 ways estrogen levels become elevated in the body:

1. **increased endogenous production**
2. **exposure to exogenous estrogens**
3. **poor estrogen detoxification**



Increased endogenous production can result from alcohol consumption, obesity, lack of exercise and/or stress.

Sources of exogenous estrogen include medications such as hormonal contraceptives and hormone replacement therapy (yes, even bioidentical HRT). Xenoestrogens are another exogenous source of estrogen, and we are exposed to hundreds of these chemicals daily. Xenoestrogens such as BPA, Phthalates, Dioxins, Parabens, and PCBs can be ingested, inhaled, or absorbed through the skin. They are found in many of our everyday products such as household cleaning products, plastic storage containers, bug spray, lotion, fingernail polish, perfume, bottled water, paper receipts, bleached toilet paper, fertilizer, non-organic food, air fresheners. The list goes on and on. Mold is yet another source of exogenous estrogen exposure. The estrogenic mycotoxin zearalenones (ZEA) is produced by the *Fusarium* species, ZEA is found primarily in contaminated grains and cereals.

SUPPORTING ESTROGEN METABOLISM FOR HORMONAL HEALTH

Poor estrogen detoxification can result from impairment to any of the phases of detoxification. As we learned above, liver and gut health are crucial to these processes. Detoxification can be impaired by nutrient deficiencies, liver dysfunction, drugs and environmental chemicals, and genetic variability impacting enzymes involved in detoxification.

LAB ASSESSMENT

Functional and conventional lab testing is critical for identifying patterns of hormonal imbalance as well as potential root cause(s).

Assessments may include:

- DUTCH Complete Panel provides an in-depth analysis of sex and adrenal hormones, as well as estrogen metabolites. If you want to know if you are metabolizing estrogen through 2-OH (“good”) pathways versus 4-OH and 16-OH (“bad”) pathways, this is the test.

- GI Effects Stool Analysis can assess levels of beta-glucuronidase and intestinal dysbiosis contributing to poor estrogen detoxification.
- Nutritional Genome Panel to assess genetic polymorphisms (SNPs) to assess function of the enzymes crucial for detoxification, such as COMT, MTHFR, and CYP450 enzymes.
- Environmental Toxins panel to identify xenoestrogen exposure.
- Mycotoxin panel to assess for ZEA exposure.
- Methylation panel to assess need for nutritional support for your methylation pathways. Methylation is one of the chemical processes involved in conjugation (Phase detoxification).
- Liver function tests to see if your liver function is impaired or needs a little extra support.

SUPPORTING ESTROGEN METABOLISM FOR HORMONAL HEALTH STRATEGIES FOR ESTROGEN BALANCE

1. Eat a diet high in cruciferous vegetables, such as broccoli, cabbage, cauliflower, and brussels sprouts. These promote 2-OH (good) metabolites and support liver health.
2. Increase your fiber intake to support estrogen metabolism in the digestive tract. High fiber diets are associated with lower levels of beta-glucuronidase, and reduced circulating estrogen. Fiber also helps to reduce constipation, and constipation also allows estrogen to be recirculated. Aim for 35g of fiber a day through fruits, vegetables, legumes, nuts, and seeds.
3. Increase your intake of ground flax seeds (1-2 Tablespoons daily) for additional fiber as well as aromatase (an enzyme that converts androgens to estrogens) inhibition.
4. Avoid alcohol, which inhibits estrogen detoxification and increases estradiol levels.
5. Avoid xenoestrogens – use glass or stainless steel in place of plastic, filter your water and indoor air, use natural cleaning and personal care products. (EWG Skin Deep website is a great resource for checking personal care product ingredient safety profiles).

6. Buy organic foods when possible to avoid pesticide (xenoestrogen) exposure. The EWG Clean 15 and Dirty Dozen lists can help you prioritize which foods to buy organic.

CONSIDER SUPPLEMENTS:

- DIM supports phase 1 detoxification enzymes, shifting production towards favorable metabolites.
- Supporting Estrogen Metabolism for Hormonal Health
- Calcium D-Glucarate supports phase 3 detoxification by inhibiting beta glucuronidase.
- Probiotics to restore the gut biome and aid in efficient elimination.

CONCLUSION

While balanced estrogen levels are essential for good health, excessive levels carry the risk of estrogen-driven cancers and other health concerns. While a number of environmental and lifestyle factors can influence estrogen production, metabolism, and balance, with proper assessment and treatment, optimal metabolism and detoxification can be supported to ensure healthy levels of this vital hormone.

PRODUCT SPOTLIGHT

Chaste Tree:



- Wide range support for female reproductive health
- May help facilitate menstrual regularity
- May promote positive mood during the menstrual cycle
- Helps maintain healthy menstrual cycle duration and flow, as well as reproductive function and breast comfort.

 Riordan Clinic
NUTRIENT STORE

The Essence of Womanhood: Navigating Identity Through Cancer's Lens



AUTHOR

Haley Nelson, PhD

Sitting across from me, a friend with the journey of cancer etched into the lines of her face, asked a question that pierced the quiet of my living room: “After all this, am I still the woman I once was?” Her words weren’t just about the aftermath of her surgeries—a hysterectomy and double mastectomy—they went deeper, touching on the essence of womanhood and identity after cancer treatment. Her question, profound and heartfelt, resonated deeply, highlighting a universal concern shared by many women walking similar paths. It served as a striking reminder of the complexities woven into our hormonal health and how it shapes our sense of self.

Understanding Womanhood Beyond the Physical

The dance of hormones within our bodies does more than just regulate our physical functions; they play a pivotal role in the rich tapestry of our womanhood. When cancer threatens this delicate balance, it challenges more than our health—it calls into question our very identity. But through a lens of resilience and understanding, we come to realize that our essence transcends physical and hormonal configurations. Womanhood, with its layers of experiences, emotions, and inner strength, remains intact, untouched by the trials of disease and treatment.

The Science Behind the Healing

In the realm of hormone-related cancers, where surgeries like mastectomies and hysterectomies become pivotal moments in treatment, the interplay of neuroscience, mental health, and personal identity takes center stage in the journey to healing and self-discovery. At this intersection lies the body’s intricate response to stress—choreographed by the hypothalamic-pituitary-adrenal

(HPA) axis and the sympathetic nervous system.

When activated by stress or emotional turmoil, these systems release a torrent of hormones. Cortisol, known as the “stress hormone,” takes a lead role, influencing not only our mental state but also the very environment that cancer cells inhabit. Chronic stress can subtly alter this hormonal landscape, potentially swaying the course of cancer. Yet, the story doesn’t end there. Mental health conditions, such as depression and anxiety—frequent travelers on the cancer journey—can further dysregulate the HPA axis, underscoring a complex relationship between our emotional well-being and our physical health.

Hormonal Therapies: A Double-Edged Sword

For many on the path of hormone-related cancers, hormonal therapies are a necessary part of treatment, brandished with the power to disrupt cancer’s progression. Yet, these therapies often come with their own set of challenges, including effects on mood and mental health that can cloud our sense of self and identity.

Peering through a neuroscientific lens offers a glimmer of hope. In the complexities of neurotransmitter systems and mood regulation, we find strategies to mitigate these side effects, ensuring our journey through treatment is not solely about survival but also about thriving, emotionally and physically.

The Role of Neuroscience and Neuroplasticity in Healing
Delving into neuroscience provides profound insights into our capacity to navigate the psychological impacts of cancer treatment. The concept of neuroplasticity—the brain’s ability to rewire and adapt—is a beacon of hope. It demonstrates that through targeted practices and therapies, we can cultivate resilience, reduce stress, and enhance mental well-being, even amidst adversity.

As mentioned before, chronic stress can disrupt our hormonal equilibrium via the HPA axis, amplifying the challenges of hormone-related cancers. However, armed with this knowledge, we possess strategies to counteract these effects. Techniques like mindfulness meditation, cognitive-behavioral therapy, and regular physical

exercise serve as not only buffers against stress but also activators of the brain's neuroplastic capabilities, enriching our mental health and hormonal balance.

Practical Strategies for Embracing Wholeness and Wellness

In response to my friend's profound inquiry, we ventured into actionable steps to reclaim her sense of self and support her journey of healing:

- **Engage in Mindfulness and Meditation:** These sanctuaries from turmoil diminish stress and nurture a hormonal environment conducive to healing. By cultivating mindfulness, we tap into the brain's neuroplastic potential, fostering resilience and peace.
- **Incorporate Regular Physical Exercise:** Movement and exercise transcend physical health; they are pivotal in managing stress, elevating mood, and stimulating neuroplasticity. Yoga and walking offer gentle reconnections with the body, promoting hormonal balance.
- **Adopt a Hormone-Healthy Diet:** Nutritional choices play a crucial role in hormonal health. A balanced diet, rich in fruits, vegetables, whole grains, and healthy fats, supports your body's natural harmony and contributes to overall well-being.
- **Seek Community and Connection:** Immersing yourself in a supportive community provides emotional solace and a sense of belonging. Sharing your journey reinforces your identity and resilience.
- **Prioritize Restorative Sleep:** Foundational sleep is crucial for hormonal health and mental well-being. A soothing nighttime routine can enhance sleep quality, underpinning your body's healing processes and the potential for neuroplasticity.

Reflections on Resilience and Identity

As our dialogue unfolded, clarity blossomed. My friend started to see that her womanhood—her identity—wasn't anchored to physical attributes or the presence of specific hormones. It was deeply rooted in her life's experiences, her bravery, and the profound depth of her emotional landscape.

The journey through hormone-related cancer, with its myriad of challenges and uncertainties, also paves the way for deep personal growth and understanding. Grounding our approach in neuroscience, embracing the promise of neuroplasticity, and adopting strategies to bolster mental and hormonal health enables us to traverse this path with dignity and grace. It's a journey that reconfirms our essence, reminding us that indeed, we remain every bit the women we always were—and so much more.

In sharing these insights and strategies, I aim to illuminate a path for others to navigate their journey. Our womanhood is unyielding, a symbol of strength and resilience guiding us through the darkest times toward a future where we not only survive but thrive, embracing our complete selves with every step we take forward.

Hayley Nelson, PhD

Dr. Hayley Nelson is a neuroscientist, tenured psychology professor, international speaker and founder of The Academy of Cognitive and Behavioral Neuroscience where she is passionate about making neuroscience approachable.

She earned her PhD in Psychological and Brain Sciences from The Johns Hopkins University and has over 20 years of teaching experience with students from diverse backgrounds. She also has several peer-reviewed research publications and previous research and faculty appointments with The National Institutes of Health, The Johns Hopkins University, and The University of Pennsylvania.

PRODUCT SPOTLIGHT WOMEN'S MENOCAPS

- Support healthy menstrual function
- Promote mood balance & nervousness
- Support healthy cognitive function
- Support normal circadian rhythms & sleep patterns
- Support healthy cardiac function
- Promote stress reduction through superior adrenal support



 **Riordan Clinic**
NUTRIENT STORE



EMPOWERED HEALING: Navigating Hormonal Imbalances and Healing



AUTHOR

Jasmin Murphy
Patient Communications Manager

For as long as I can remember, my relationship with my body and hormones has been intricate and challenging. It all began at the tender age of 8 when signs of puberty emerged – monthly cramps, frequent doctor visits, and the constant anticipation of starting my period. In my family, this early onset was considered normal, but little did I know how deeply it would shape my journey.

By the time I was 13, menstruation finally arrived, but it coincided with a weight issue that had been steadily growing since I was 11. Despite being active and mindful of my diet, the cause of my weight gain remained elusive. It wasn't until I reached 43, with two children and a dramatic 425 lb weight loss story, that I confronted the truth: something was amiss with my body, and I needed to uncover the root cause.

“I’ve always preferred addressing root causes over merely treating symptoms with medication.”

I've always preferred addressing root causes over merely treating symptoms with medication. Upon joining Riordan, I sensed I was in the right place to embark on my health journey authentically. However, within weeks of starting, I faced a new challenge: an ovarian cyst requiring immediate attention. After comprehensive blood work, it became clear that while my estrogen and testosterone levels were within range, my progesterone was severely deficient.

Empowered by this knowledge, I opted for Bioidentical Hormone Replacement Therapy (BHRT) with progesterone troches instead of low estrogen birth control. The relief was palpable – better sleep, stabilized moods, improved energy, and regulated cycles. It was a revelation.

Six months later, another consultation revealed multiple ovarian cysts. While they were asymptomatic, I sought further investigation to address underlying issues. Dr. Dunn's guidance led to a tailored regimen, incorporating nightly castor oil packs and supplements while gradually tapering off BHRT. Initially hesitant, I soon realized Dr. Dunn had equipped me with tools to support my body's innate healing abilities.

As I reflect on my journey, I'm reminded of the profound impact understanding our bodies can have on our overall well-being. Embracing holistic approaches, listening to our bodies, and seeking knowledgeable guidance can pave the way to transformative healing. As I continue on this journey, I reflect on the relief and progress I've experienced. Though there's still a road ahead, addressing root causes has been transformative. I'm grateful for the journey and wonder how different it might have been had I started sooner.

Quinoa Salad with Roasted Vegetables and Tahini Dressing

This quinoa salad is packed with hormone-balancing ingredients like quinoa (a good source of protein and fiber), colorful vegetables rich in antioxidants, and tahini (made from sesame seeds, a good source of healthy fats). It's a delicious and nutritious dish that supports overall hormone health and wellbeing.



Ingredients:

1 cup quinoa, rinsed
2 cups water or vegetable broth
1 small sweet potato, peeled and diced
1 small zucchini, sliced
1 red bell pepper, sliced
1 yellow bell pepper, sliced
1 red onion, sliced
2 tablespoons olive oil
Salt and pepper, to taste
1/4 cup chopped fresh parsley or cilantro

For Tahini Dressing:
1/4 cup tahini
2 tablespoons lemon juice
2 tablespoons water
1 garlic clove, minced
Salt and pepper, to taste

Instructions:

1. Preheat the oven: Preheat your oven to 400°F (200°C).
2. Prepare the quinoa: In a saucepan, combine the rinsed quinoa and water or vegetable broth. Bring to a boil, then reduce heat to low, cover, and simmer for 15-20 minutes until quinoa is cooked and liquid is absorbed. Remove from heat and let it sit covered for 5 minutes. Fluff with a fork.
3. Roast the vegetables: While the quinoa is cooking, spread the diced sweet potato, sliced zucchini, bell peppers, and red onion on a baking sheet. Drizzle with olive oil, season with salt and pepper, and toss to coat. Roast in the preheated oven for 20-25 minutes, or until vegetables are tender and slightly caramelized.
4. Make the tahini dressing: In a small bowl, whisk together tahini, lemon juice, water, minced garlic, salt, and pepper until smooth and creamy. Adjust consistency with additional water if needed.
5. Assemble the salad: In a large bowl, combine the cooked quinoa and roasted vegetables. Pour the tahini dressing over the salad and toss gently to coat.

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