

## Acne vulgaris & Gender-Affirming Testosterone Use: Addressing Acne With Holistic Skin Care

In my practice as a clinical herbalist and holistic health educator, I've worked with several clients who have experienced acne after beginning exogenous testosterone use as part of gender-affirming hormone therapy. What follows is generalised skin care protocol for addressing this concern. Herbal medicine is not a one-size-fits-all, and many factors must be considered when creating a holistic wellness plan to address acne vulgaris. Herbalism considers the unique constellation of characteristics that shape a whole person's wellness goals – constitution, health history, accessibility, lifestyle, and more. These suggestions are intended to be a starting point for further self-education, and I suggest consulting with a physician and a clinical herbalist before making drastic dietary changes or beginning a new herbal protocol.

The skin is the body's largest organ. It is more than simply a barrier; it is involved in multiple neuro-immuno-endocrine functions<sup>1</sup>. The skin has many structural components. The sebaceous glands create and secrete sebum, a waxy substance which lubricates the skin and protects it from damage. The pathogenesis of acne vulgaris is multifaceted. The main factors involved are: excess sebum production by androgen-mediated stimulation of sebaceous glands; abnormal keratinization of the follicles leading to plugging and comedone formation; *Propionibacterium acnes* colonization; and inflammation of the follicle and surrounding skin<sup>2</sup>.

Acne is a widely reported side effect of exogenous testosterone use. For people who are beginning exogenous testosterone use, the sudden onset or exacerbation of acne can be unwelcome and can influence self-esteem. For people using masculinizing hormones, acne may be linked to androgen metabolism, as androgens play a role in sebocyte growth and differentiation and sebum production.<sup>3</sup> Other correlated factors

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<sup>1</sup> Nejati R, Kovacic D, Slominski A. Neuro-immune-endocrine functions of the skin: an overview. *Expert Rev Dermatol.* 2013;8(6):581-583. doi:10.1586/17469872.2013.856690

<sup>2</sup> Toyoda M, Morohashi M. Pathogenesis of acne. *Med Electron Microsc.* 2001;34(1):29-40. doi:10.1007/s007950100002

<sup>3</sup> Howa Yeung, Laura Ragmanauskaite, Qi Zhang, Jin Kim, Vin Tangpricha, Darios Getahun, Michael J. Silverberg, Michael Goodman, Prevalence of moderate to severe acne in transgender adults: A cross-sectional survey, *Journal of the American Academy of Dermatology*, 10.1016/j.jaad.2020.02.053, (2020).

include: insulin sensitivity and metabolism; overall nutrition status; detoxification and elimination pathways; stress; and genetics.

A holistic protocol for addressing acne is twofold: a topical skincare routine and internal herbs and whole foods nutrition to balance the integumentary and endocrine systems. Further, it is important to support the liver, as it plays a role in both hormone synthesis and clearance as well as detoxification of metabolic waste. I suggest beginning any skin care protocol slowly (over several weeks) to allow the body time to adjust.

### **Topical Skin Care Protocol**

- Wash skin twice per day using a cleanser that contains salicylic acid and/or salicylate-rich herbs, such as wintergreen (*Gaultheria procumbens*) or white willow bark (*Salix alba*). Pat gently to dry.
- Moisturize skin after washing with a non-comedogenic oil. I like jojoba oil<sup>4</sup>, sweet almond oil<sup>5</sup> or grape seed oil<sup>6</sup>
- Diluted witch hazel (*Hamamelis virginiana*) can be used as a base for a toner with the addition of tannin-rich herbs like rose (*Rosa spp*) and/or salicylate-rich herbs like white willow bark (*Salix alba*), meadowsweet (*Filipendula ulmaria*), and wintergreen (*Gaultheria procumbens*).
- The essential oil of tea tree (*Melaleuca alternifolia*) can be diluted in a carrier oil and applied directly to painful acne spots. Tea tree essential oil should not be applied to broken skin.
- For oily skin, a mask of bentonite or green clay can be used on a weekly basis.

### **Anti-inflammatory Herbs for Topical Use**

- Turmeric (*Curcuma longa*) rhizome can be mixed with clay and applied as an anti-inflammatory mask. Turmeric contains anti-inflammatory and antioxidant polyphenolic pigments, known as curcuminoids, that may be responsible for its medicinal effects<sup>7</sup>.

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<sup>4</sup> Lin TK, Zhong L, Santiago JL. Anti-Inflammatory and Skin Barrier Repair Effects of Topical Application of Some Plant Oils. *Int J Mol Sci.* 2017;19(1):70. Published 2017 Dec 27. doi:10.3390/ijms19010070

<sup>5</sup> Zeichner JA, Berson D, Donald A. The Use of an Over-the-Counter Hand Cream With Sweet Almond Oil for the Treatment of Hand Dermatitis. *J Drugs Dermatol.* 2018;17(1):78-82.

<sup>6</sup>Moalla Rekik, D., Ben Khedir, S., Ksouda Moalla, K., Kammoun, N. G., Rebai, T., & Sahnoun, Z. (2016). Evaluation of Wound Healing Properties of Grape Seed, Sesame, and Fenugreek Oils. Evidence-based complementary and alternative medicine : eCAM, 2016, 7965689. <https://doi.org/10.1155/2016/7965689>

<sup>7</sup> Chin KY. The spice for joint inflammation: anti-inflammatory role of curcumin in treating osteoarthritis. *Drug Des Devel Ther.* 2016;10:3029-3042. Published 2016 Sep 20. doi:10.2147/DDDT.S117432

- Green tea (*Camellia sinensis*) is rich in tannins and polyphenols<sup>8</sup> that contribute to its anti-inflammatory, antioxidant, antimicrobial, antineoplastic, and astringent actions. Numerous studies have concluded that green tea use -- both orally and topically -- can play a role in reducing sebum production<sup>9</sup>.
- Rose (*Rosa spp.*) flower petals are full of astringent tannins (e.g. gallic acid and tellimagrandin<sup>10</sup>). The petals are also rich of volatile oils (e.g. geraniol, citronellol, nerol, and damascenone) which provide rose's characteristic odor<sup>11</sup>. These volatile oils support the nervous system and may contribute to the anxiolytic effects of rose aromatherapy<sup>12</sup>. Rose hips oil is used in holistic skin care as well, as it is highly antioxidant and anti-inflammatory<sup>13</sup>.

### **Nutritional Support**

Changes to diet and overall nutritional status can impact skin health. Foods to increase include the following:

- Low glycemic carbohydrates, such as sweet potatoes, squash, whole grains, and leafy greens. Regularly consuming high-glycemic foods, such as from highly refined carbohydrates and processed foods, may exacerbate acne. Where possible, replace refined carbohydrates with low-glycemic carbohydrates instead. Similarly, hyperinsulinemia – consistently high blood insulin levels in the blood – increases sebaceous gland cell proliferation. Insulin resistance can play a role in severe or recurrent acne.
- Bitter foods such as leafy greens, broccoli, artichokes, asparagus, chocolate, cabbage, radishes, chocolate, and more. Additionally, consider taking a bitters

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<sup>8</sup> Saric S, Notay M, Sivamani RK. Green Tea and Other Tea Polyphenols: Effects on Sebum Production and Acne Vulgaris. *Antioxidants (Basel)*. 2016;6(1):2. Published 2016 Dec 29. doi:10.3390/antiox6010002

<sup>9</sup> Saric S, Notay M, Sivamani RK. Green Tea and Other Tea Polyphenols: Effects on Sebum Production and Acne Vulgaris. *Antioxidants (Basel)*. 2016;6(1):2. Published 2016 Dec 29. doi:10.3390/antiox6010002

<sup>10</sup> Shiota S, Shimizu M, Sugiyama J, Morita Y, Mizushima T, Tsuchiya T. Mechanisms of action of corilagin and tellimagrandin I that remarkably potentiate the activity of beta-lactams against methicillin-resistant *Staphylococcus aureus*. *Microbiol Immunol*. 2004;48(1):67-73. doi:10.1111/j.1348-0421.2004.tb03489.x

<sup>11</sup> Mahboubi M. Rosa damascena as holy ancient herb with novel applications. *J Tradit Complement Med*. 2015;6(1):10-16. Published 2015 Oct 30. doi:10.1016/j.jtcme.2015.09.005

<sup>12</sup> Kheirkhah M, Vali Pour NS, Nisani L, Haghani H. Comparing the effects of aromatherapy with rose oils and warm foot bath on anxiety in the first stage of labor in nulliparous women. *Iran Red Crescent Med J*. 2014;16(9):e14455. Published 2014 Aug 17. doi:10.5812/ircmj.14455

<sup>13</sup> Mármol I, Sánchez-de-Diego C, Jiménez-Moreno N, Ancín-Azpilicueta C, Rodríguez-Yoldi MJ. Therapeutic Applications of Rose Hips from Different Rosa Species. *Int J Mol Sci*. 2017;18(6):1137. Published 2017 May 25. doi:10.3390/ijms18061137

tincture before meals to help with digestion and absorption of nutrients and to improve gut tissue integrity and support the liver's clearance of waste materials<sup>14</sup>.

- Omega 3s and anti-inflammatory fats, as these are the building blocks for sebum. An "oil change" towards anti-inflammatory fats can shift sebum composition and reduce the propensity towards clogged pores. Good food sources include: cold water fish, olive oil, flaxseed oil, flax and chia seeds, pumpkin seeds, hemp seeds, walnuts, kidney beans, and edamame.
- Fibre from fruits, vegetables, and legumes and whole grains, as these help the body balance blood sugar and maintain a robust microbiome. Research suggests these factors are correlated with skin health<sup>15</sup>.
- Zinc from food sources such as red meat, shellfish, legumes, nuts and seeds, and sweet potatoes. The skin is the third most zinc-abundant tissue in the body<sup>16</sup> and plays an important role in skin cell growth<sup>17</sup>. Zinc may also act as an inhibitor of 5-alpha reductase<sup>18</sup> which can down-regulate sebaceous gland activity<sup>19</sup>.
- Vitamin B6, found in foods such as salmon, chicken, pork, bananas, avocados and pistachios. Studies suggest that vitamin B6 potentiates the inhibitory action of zinc on 5-alpha reductase<sup>20</sup>, an enzyme which is involved in hormonally-related acne.

## **The Endocrine System & Alterative Herbs**

Alterative herbs are those which aid the function of the body's elimination channels, and help restore proper elimination and detoxification processes. Alteratives help the body clear pesticides, chemicals or environmental toxins as well as the normal waste products associated with metabolism such as proteinaceous wastes, cellular debris, and hormones. Many alterative herbs also modulate the liver's ability to synthesize and

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<sup>14</sup> McDonald J. Blessed Bitters. <https://herbcraft.org/bitters.pdf>. Accessed August 13, 2020.

<sup>15</sup> Kucharska A, Szmurło A, Sińska B. Significance of diet in treated and untreated acne vulgaris. *Postepy Dermatol Alergol*. 2016;33(2):81-86. doi:10.5114/ada.2016.59146

<sup>16</sup> Ogawa Y, Kinoshita M, Shimada S, Kawamura T. Zinc and Skin Disorders. *Nutrients*. 2018;10(2):199. Published 2018 Feb 11. doi:10.3390/nu10020199

<sup>17</sup> <https://pi.oregonstate.edu/mic/health-disease/skin-health/minerals>

<sup>18</sup> Stamatiadis D, Bulteau-Portois MC, Mowszowicz I. Inhibition of 5 alpha-reductase activity in human skin by zinc and azelaic acid. *Br J Dermatol*. 1988;119(5):627-632. doi:10.1111/j.1365-2133.1988.tb03474.x

<sup>19</sup> Thiboutot D, Harris G, Iles V, Cimis G, Gilliland K, Hagari S. Activity of the type 1 5 alpha-reductase exhibits regional differences in isolated sebaceous glands and whole skin. *J Invest Dermatol*. 1995;105(2):209-214. doi:10.1111/1523-1747.ep12317162

<sup>20</sup> Stamatiadis D, Bulteau-Portois MC, Mowszowicz I. Inhibition of 5 alpha-reductase activity in human skin by zinc and azelaic acid. *Br J Dermatol*. 1988;119(5):627-632. doi:10.1111/j.1365-2133.1988.tb03474.x

metabolize hormones and support the body's ability to regulate blood sugar and insulin production.

Alterative herbs to consider include the following:

- Burdock (*Arctium lappa*): Burdock root is a mild bitter and alterative used internally to support the skin and liver's clearance of waste materials. Similarly, burdock seed is used to address inflamed or "crusty" skin conditions. Additionally, the root is rich in inulin, which feeds beneficially gut flora and may reduce propensity towards "leaky gut" and insulin sensitivity. Research suggests that these factors influence acne pathogenesis<sup>21</sup>.
- Calendula (*Calendula officinalis*): Calendula flowers are a potent alterative, lymphagogue, immune tonic, and modulator of inflammation. Calendula is a popular topical skin care remedy, and can be used as part of a cleanser or toner formula. Calendula can be taken internally as tea or tincture as well.
- Artichoke leaf (*Cynara scolymus*): Artichoke leaf is a bitter alterative that aids liver function and promotes balanced blood sugar. It can be taken internally as tincture, tea, or as a fresh-leaf juice.

### **The Role of Androgens in Acne**

Androgens are a class of hormones that includes testosterone, androstenedione, dihydrotestosterone (DHT), and dehydroepiandrosterone (DHEA). Androgens are one factor in sebum production. DHEA is predominantly produced by the adrenal glands, while androstenedione is produced by the ovaries and adrenal glands in equal proportions. 5 $\alpha$ -reductase is an enzyme that converts testosterone into the more potent DHT. Androgen-induced sebum production is associated with 5 $\alpha$ -reductase reactions<sup>22</sup>. 5 $\alpha$ -reductase *inhibitors* are used to address androgen-dependent conditions such as benign prostatic hyperplasia and androgenetic alopecia (hormonally-related hair loss). There are several herbs that may act as mild inhibitors of 5 $\alpha$ -reductase. These plants may limit the conversion of exogenous testosterone to DHT and could limit conditions such as acne and scalp baldness associated with exogenous testosterone use.

5 $\alpha$ -reductase inhibitors include:

- Nettle root (*Urtica dioica*): Nettle root has been studied as a 5 $\alpha$ -reductase inhibitor and is used clinically by some herbalists to "cool" the effects of exogenous testosterone use. It can be taken internally in tincture form.

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<sup>21</sup>Elsaie ML. Hormonal treatment of acne vulgaris: an update. *Clin Cosmet Investig Dermatol*. 2016;9:241-248. Published 2016 Sep 2. doi:10.2147/CCID.S114830

<sup>22</sup>Kurokawa I, Danby FW, Ju Q, Wang X, Xiang LF, Xia L, Chen W, Nagy I, Picardo M, Suh DH. New developments in our understanding of acne pathogenesis and treatment. *Exp Dermatol*. 2009;18(10):821-32.

- Saw palmetto (*Serenoa repens*): Saw palmetto berries have been studied as a 5 $\alpha$ -reductase inhibitor and are used clinically to address testosterone-dependent conditions such as benign prostate hyperplasia. It can be taken internally in tincture form or as a standardized extract of fatty acids. Saw palmetto fatty acids can also be applied topically to the skin in combination with a carrier oil, such as argan or sesame seed oil.

### Further Resources

Acne vulgaris is a complex condition, and this overview is far from comprehensive. For more information about herbal medicine and exogenous hormone use, I recommend consulting with a clinical herbalist as well as the following resources:

- *Competent Care for Transgender, GenderQueer and Non-Binary Folks* by clinical herbalists Vilde Chaya Fenster-Erich and Larken Bunce<sup>23</sup>
- *The Herbal Highway: Herbs for Transgender Health with Kara Sigler*<sup>24</sup>
- *Principles and Practices of Phytotherapy: Modern Herbal Medicine* by Simon Mills and Kerry Bone<sup>25</sup>

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<sup>23</sup> See: <https://sites.google.com/vtherbcenter.org/transhealth/home>

<sup>24</sup> See:

<https://www.emilianolemus.com/events/2018/7/19/the-herbal-higway-herbs-for-transgender-health-with-ka-ra-sigler>

<sup>25</sup> Bone K, Mills S. *Principles and Practice of Phytotherapy: Modern Herbal Medicine*. Churchill Livingstone; 2013.