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The new paradigm for androgenetic alopecia and plant-based folk remedies: 5α-Reductase inhibition, reversal of secondary microinflammation and improving insulin resistance

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Abstract

Ethnopharmacological relevance:

Research in the past half a century has gradually sketched the biological mechanism leading to androgenetic alopecia (AGA). Until recently the aetiological paradigm has been too limited to enable intelligent commentary on the use of folk remedies to treat or reduce the expression of this condition. However, our understanding is now at a point where we can describe how some folk remedies work, predict how effective they will be or why they fail.

Results:

The new paradigm of AGA is that inheritance and androgens (dihydrotestosterone) are the primary contributors and a secondary pathology, microinflammation, reinforces the process at more advanced stages of follicular miniaturisation. The main protagonist to microinflammation is believed to be microbial or *Demodex* over-colonization of the infundibulum of the pilosebaceous unit, which can be ameliorated by antimicrobial/acaricidal or anti-inflammatory therapies that are used as adjuvants to androgen dependent treatments (either synthetic or natural). Furthermore, studies reveal that suboptimal androgen metabolism occurs in both AGA and insulin resistance (low SHBG or high DHT), suggesting comorbidity. Both can be ameliorated by dietary phytochemicals, such as specific classes of phenols (isoflavones, phenolic methoxy abietanes, hydroxylated anthraquinones) or polycyclic triterpenes (sterols, lupanes), by dual inhibition of key enzymes in AGA (5α-reductase) and insulin resistance (ie., DPP-4 or PTP1B) or agonism of nuclear receptors (PPARγ). Evidence strongly indicates that some plant-based folk remedies can ameliorate both primary and secondary aetiological factors in AGA and improve insulin resistance, or act merely as successful adjuvants to mainstream androgen dependent therapies.

Conclusion:

Thus, if AGA is viewed as an outcome of primary and secondary factors, then it is better that a 'multimodal' or 'umbrella' approach, to achieve cessation and/or reversal, is put into practice, using complementation of chemical species (isoflavones, anthraquinones, procyanidins, triterpenes, saponins and hydrogen sulphide prodrugs), thereby targeting multiple 'factors'.