

Chapter 11

Herbal Medicines for Thyroid Diseases

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ABSTRACT

Thyroid dysfunctions represent the most common endocrine disorders and a major healthcare issue throughout the globe. The drawbacks associated with the conventional treatment approaches calls upon for the need to explore alternative treatment strategies. Herbal medicinal approach has been used since ages; however, it is not acceptable by the clinicians. Currently, there is no scientific evidence for the efficacy of herbal medicines in patient management. The necessity to fight against adverse drug events, high treatment costs, and compliance issues is forcing the scientists to look upon for traditional herbal medicinal approaches. This chapter provides an overview of the efficacy of different herbal medicines and scientific evidence that necessitates their usage for improving thyroid functions. There remains a need for a careful and routine follow-up as a mandatory parameter before establishing herbal medicine as a global treatment approach.

BACKGROUND

The endocrine system is the network of glands that regulates several vital functions of the human body ranging from regulation of heart beat to reproduction. It consists of ten glands including the thyroid gland, adrenal gland, hypothalamus, islet cells of pancreas, pituitary gland, parathyroid gland, thymus, pineal gland, ovaries and testis. Even a slight hiccup can perturb the delicate balance of these glands leading to endocrine disorders that manifests in various forms. Usually these disorders have been characterized-

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depending upon the amount of hormone (too much or too scanty) produced by these glands; secondly, depending upon the development of lesions/tumors in the endocrine system that may/may not affect hormone levels; thirdly, infection and fourthly, failure of gland to stimulate another. The imbalances in the hormone levels are kept in check by the feedback system, however, anomalous feedback system possess threat for managing the levels of hormones in the blood thus, leading to the development of disease that manifests depending upon the gland in question.

Thyroid gland constitutes an important component of endocrine system that regulates several physiological functions ranging from oxygen utilization, growth, development to cellular metabolism. The gland is located at the front of neck; secretes thyroxine (T4) and tri-iodothyronine (T3) that travels through the blood stream to orchestrate the basal metabolic rates, growth and development. Thyroid disorders symptoms ranges from tiredness, depression, constipation, abnormal weight gain/loss, sensitivity to cold temperature, bradycardia/tachycardia, tremors, diarrhea, irritability, anxiety, insomnia etc. Thyroid disorder is amongst the major and most common health disorders that affects the global community, with an estimate of 42 million cases in India (Unnikrishnan & Menon, 2011). According to projections of American Thyroid Association (ATA) more than 12 percent of Americans develop thyroid diseases during their life time. With an approximate number of 20 million thyroid cases; the female population possesses five to eight times higher risk of disease development than males (Sabra & Di Cristofano, 2019). There remains a growing concern for managing the thyroid diseases due to its increasing prevalence.

It has long been known that thyroid functions can be modulated by natural (present in water or food-stuffs) and/or synthetic (in medicines) compounds. Such compounds affecting the thyroid homeostasis are termed as the thyroid disruptors that exert their effect on either hormone synthesis, metabolism, signaling, transport and/or tumorigenesis that may trigger autoimmune process. Disease management involves the hormone replacement therapy, iodine therapy, surgery and/or anti-thyroid therapy depending upon the form of disorder. The available treatment approaches possess certain side effects including the muscular weakness, loss of appetite, hair fall etc. (Sabra & Di Cristofano, 2019). Furthermore, certain medications affect the thyroid functions while others may worsen the symptoms of hypo-/hyper-thyroidism; these issues call upon for organized patient care approach. These days research for alternative medicinal approach, with minimal side effects has gained momentum. This chapter gains an insight into the various thyroid dysfunctions, herbal medicinal approach and their mode of action for managing thyroid disorders.

VARIOUS THYROID DYSFUNCTIONS

Iodine deficiency has been considered as the most common cause of thyroid diseases throughout the world. Further there are significant evidences for the involvement of environmental factors that potentiates the risk for thyroid disorders. As discussed previously, there are several mechanisms in which thyroid functions are perturbed; pesticides, fungicides and insecticides have endocrine disruptors which directly hampers the thyroid functions by inhibiting the iodine uptake, interfering with receptor signaling, enzymes, gene expressions and transport proteins. Depending upon the different anomalies of thyroid functioning the thyroid dysfunctions can be broadly categorized into- goiter, hypothyroidism, hyperthyroidism (Grave's disease), thyroid cancer, thyroid nodules, thyroiditis (Hashimoto's thyroiditis) and thyroid hormone resistance. The disease management has been pretty straightforward however, inappropriate treatment, misdiagnosis, overdiagnosis sometimes possess the obstacle for disease management practices.

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