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Integrative medicine – combination of conventional medicine and traditional herbal medicine may find its potential applications in the treatment of certain dermatological and endocrine diseases – review of the literature

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Abstract

Introduction and purpose

Traditional Chinese herbal medicine is an integral component of a comprehensive healing system known as Traditional Chinese Medicine (TCM). Within TCM, herbs are utilized to rebalance the energy forces of Yin and Yang, which flow through imperceptible channels within the body with the aim of restoring energy equilibrium. It is important to acknowledge that herbs have the potential to exert significant effects on the body comparable to pharmaceutical drugs, and therefore, should be approached with equal caution and respect

The aim of the study was to present the current state of knowledge about the potential use of Chinese herbs in the treatment of certain dermatological and endocrine diseases.

State of the knowledge

Chinese medicine has found application in various diseases and health conditions, both physical and mental. In the studies delving into dermatological diseases, Chinese medicine therapy resulted in a reduction in chronic urticaria activity and psoriasis area severity index. In addition, Chinese herbal medicine (CHM) effectively improved the response rate and reduced the maximum nodule diameter of benign thyroid nodules. Furthermore, it was reported that certain Chinese herbs improve the functioning of mitochondria in β -cells contributing to better management of patients with diabetes mellitus.

Conclusion

Chinese medicine seems to be a valuable supplement to conventional medicine in the treatment of some chronic diseases. Simultaneously, our focus should be on the development of a new wave of pharmaceutical products that guarantee high efficacy and low toxicity conforming to international standards. It is imperative to enhance research in Chinese medicine and advance engineering technologies to ensure the superior quality of TCM preparations.

Keywords: Chinese medicine, traditional medicine, Chinese herbs, integrative medicine

Introduction:

Traditional Chinese Medicine (TCM) has been practiced and cherished as a medical science and cultural legacy by the Chinese population for thousands of years [1]. In recent years, with the growing interest in alternative treatments, Chinese medicine has gained attention not only in the Central Asian region, but also internationally [2].

Chronic diseases such as diabetes, heart disease, autoimmune diseases, mental disorders are a serious challenge for modern medicine. Many patients are looking for alternative and complementary forms of therapy that can help with symptom relief, quality of life, and overall well-being. Chinese medicine with its unique diagnostic and therapeutic methods can be a valuable option in such cases [3,4]. Some studies indicate that Chinese preparations are used in the treatment of Alzheimer disease, functional dyspepsia as well as insomnia. Furthermore, they lead to the reduction of inflammatory symptoms and improvement of skin condition in patients with psoriasis [5,6].

However, the position of the World Health Organization (WHO) is cautious about the traditional methods of Chinese medicine and recommends more detailed clinical and scientific studies to confirm the potential benefits and assess the risks [7]. Among the medical community in Europe, there are some doubts about the composition of Chinese medicine preparations. One of the main reasons for these doubts is the diversity and lack of standardization in the production process and composition of Chinese medicine preparations [8]. Many European doctors and scientists emphasize the need to conduct scientific research that will provide reliable data on the composition and effectiveness of these preparations [9].

The aim of our study was to present the current state of knowledge about the potential use of Chinese herbs in the treatment of certain dermatologic and endocrine diseases.

Material and methods:

A thorough examination of the most recent research until 20th June 2023 was undertaken. The PubMed database was utilized to access relevant materials. Only publications that met specific criteria were considered: papers published in English and available in full text. The review encompassed original research and literature reviews excluding letters to the editor and preprint articles. On 20th June 2023, a literature review was conducted using the keywords: "Chinese herbs" OR "Chinese medicine" OR "TCM" OR "traditional medicine"

AND “dermatology” OR “endocrinology”. A total of 167 results were retrieved and after reviewing the abstracts, 25 papers were selected for detailed analysis as they fulfilled the predetermined criteria.

The state of knowledge:

Dermatology:

Wang et al. conducted a study to assess the effectiveness of Scutellarein (Scu) in treating atopic dermatitis (AD) and to understand its underlying molecular mechanism. They evaluated the impact of Scu on AD using mouse models of dermatitis induced by 2,4-dinitrofluorobenzene (DNFB) and carvacrol. The researchers analyzed cytokine mRNA levels through quantitative PCR (qPCR) and measured serum IgE levels using ELISA. The results indicated that subcutaneous administration of Scu significantly alleviated itchiness, epidermal hyperplasia, and skin inflammation induced by DNFB and carvacrol in mice without any genetic modifications [10].

Another application of Chinese medicine in dermatology was included in a meta-analysis by Lu et al. The objective of this meta-analysis was to compare the effectiveness and safety variations between the combination of acupuncture and conventional Western medicine in order to offer recommendations for the clinical management of chronic urticaria. The pooled results indicated that the overall effectiveness of acupuncture combined with traditional Chinese medicine was significantly higher compared to conventional Western medicine in treating chronic urticaria (relative risk [RR] = 1.29, 95% confidence interval [CI]: 1.2-1.38). Moreover, the analysis showed that the Urticaria Activity Score (standardized mean difference = -1.51, 95% CI: -2.24 to -0.78) and pruritus score (standardized mean difference = -1.09, 95% CI: -1.71 to -0.47) were significantly lower in the acupuncture combined with traditional Chinese medicine group compared to the conventional Western medicine group [11].

The study conducted by Nguyen et al. aimed to explore the therapeutic effects of the ethanolic extract derived from *Rheum palmatum* L. (RPE) and its chemical constituents in treating psoriasis, as well as to investigate the underlying mechanisms. By utilizing network

pharmacological analysis, the researchers identified that the components of RPE targeted 20 genes associated with pathways relevant to psoriasis, including IL-17, MAPK, and TNF signaling pathways. Among the five components studied, rhein and emodin demonstrated inhibitory effects on TNF- α and IL-17 production in EL-4 cells, suppressed the production of CXCL8, CXCL10, CCL20, and MMP9, and reduced proliferation in HaCaT cells [12]. Similarly, Luo et al. assessed efficacy and safety of CHM (Chinese Herbs Medicine) for the treatment of psoriasis in evidence From 11 High-Quality Randomized Controlled Trials. It turned out that the psoriasis area severity index (PASI) score in the CHM group was significantly lower compared to the placebo group (mean difference [MD], -4.02; 95% confidence interval [CI], -6.71 to -1.34; $p = 0.003$). The meta-analysis indicated that the recurrence rate (relative risk [RR], 0.74; 95% confidence interval [CI], 0.32 to 1.71; $p = 0.48$) and the occurrence of adverse events (RR, 1.36; 95% CI, 0.95 to 1.93; $p = 0.09$) were comparable between the use of CHM and the use of a placebo [13].

There are also reports of the effectiveness of Chinese medicine in the treatment of androgenetic alopecia. You et al. conducted meta-analysis involving 30 studies and 2615 patients. Participants were divided into two groups: a Traditional Chinese Medicine (TCM) group and a conventional medicine (CM) group. The findings revealed that the TCM group had a significantly higher total efficacy rate (TER) compared to the control group (odds ratio [OR] = 3.34, 95% confidence interval [CI] = 2.75-4.05, $p < 0.00001$). Additionally, the TCM group experienced a notable reduction in the total symptom score (TSS) when compared to the CM group (standardized mean difference [SMD] = -0.86; 95% CI = -1.19, -0.53; $p < 0.00001$) [14].

Endocrinology:

Chinese medicine is also used in the treatment of endocrine diseases. It was reported that Chinese herbal medicine (CHM) effectively improved the response rate and reduced the maximum nodule diameter of benign thyroid nodules (BTN). In the meta-analysis conducted by Zhu et al. control group consisted of patients who received treatment with Western medicine, such as oral thyroxine tablets or microwave ablation. On the other hand, the treatment group received a combination of Chinese herbal medicine (CHM) and Western medicine. The findings indicated that the combined therapy was linked to a higher response rate (odds ratio [OR] = 3.35, 95% confidence interval [CI] 2.40-4.68, $p < 0.05$). Following the treatment, the treatment group demonstrated a reduction in both the maximum nodule

diameter (standardized mean difference [SMD] = -0.76, 95% CI -0.98 to -0.53, $p < 0.05$) and thyroid volume (SMD = -1.14, 95% CI -1.94 to -0.35, $p < 0.05$) in comparison to the control group [15].

Another study assessed the effectiveness of Chinese medicine in the adjuvant treatment of Hashimoto's thyroiditis with hypothyroidism. The results from the meta-analysis demonstrated that combining Chinese herbal medicine (CHM) with Western medicine (WM) produced a superior therapeutic effect and more effective reduction in clinical symptoms compared to WM alone. The comprehensive efficacy (odds ratio [OR] = 4.83; 95% confidence interval [CI] 3.45-6.76), syndrome efficacy (OR = 5.95; 95% CI 3.94-8.99), TCM symptom score (standardized mean difference [SMD] = -1.49; 95% CI -1.86 to -1.11), FT3 (SMD = 0.59; 95% CI 0.48-0.71), FT4 (SMD = 0.59; 95% CI 0.48-0.71), TSH (SMD = -0.97; 95% CI -1.35 to -0.58), and thyroid volume (SMD = -0.25; 95% CI -0.34 to 0.15) all showed significant improvement in the treatment group. However, there was no significant difference in the incidence of adverse events between the two groups (OR = 1.00; 95% CI 0.14-7.27) [16].

According to research, traditional Chinese medicine may affect gut microbiota that could contribute to the occurrence and development of obesity [17]. Zhang et al. discovered that ginsenosides, which are the active compounds found in ginseng, positively influenced the makeup of the gut microbiota, elevated the levels of short-chain fatty acids (SCFAs) and receptor proteins such as GPR41, GPR43, and GPR109A, and improved the integrity of the intestinal barrier. Similarly, Song et al. observed that the extract derived from the root of *Atractylodes macrocephala* Koidzumi showed protective effects against diet-induced obesity and glucose intolerance in mice [18,19].

Furthermore, traditional Chinese medicine can play a complementary role in the treatment of diabetes. One study demonstrated that baicalein has the potential to improve the functioning of mitochondria in β -cells by activating a pathway that relies on cAMP. As a result, the vitality and functionality of β -cells are enhanced [20]. Additional research has indicated that apigenin possesses the ability to protect the functionality of β -cells by impeding the activation of inflammatory signaling pathways [21]. Hepatic inflammation has been highlighted as a player in the pathogenesis of insulin resistance and type 2 diabetes mellitus [22]. Oxidative stress has been linked to nuclear factor κ B (NF κ B) and cyclooxygenase 2 (COX2) as mediators of inflammation. The study of Li et al. showed that S-[6]-Gingerol –

most pungent natural compound of ginger, can inhibit the reactive-oxygen-species- (ROS-) activated NF κ B/COX2 pathway in human hepatocyte HuH7 cells stimulated by the cytokine, IL1 β . It contributes to an anti-inflammatory effect and it is worth considering use it as prevention of inflammation and chronic diseases. According to a study performed on high-fat diet induced obese mice, *Memecylon umbellatum* – type of Melastomataceae, reduced level of serum IL-6 -pro-inflammatory cytokine. Additionally, it reduced insulin resistance, suggesting its use as an antidiabetic agent [23].

According to research, hypothalamic-pituitary-adrenal axis hormones and adrenal function can be influenced by Sini Decoction (SND) – a well-known remedy in TCM [24]. Lai et al. reported that Sini Decoction has the potential to downregulate Toll-like receptor (TLR4) mRNA, reduce production of TNF- α and IL-10 in adrenal tissue in septic rats and improve the responsiveness of adrenal gland. In the study conducted on patients with sepsis, Sini Decoction could increase level of cortisol, reduce level of ACTH and improve symptoms in septic patients [25]. Moreover, it has the potential to influence hypothalamic-pituitary-adrenal axis function in septic patients without changing the death rate.

Conclusion:

It seems crucial to focus on the combination of modern medicine and traditional Chinese theory, taking full advantage of the unique features of TCM in the treatment of certain dermatological and endocrine diseases. However, further research is needed to assess the safety profile and know the full composition of Chinese preparations in order to ensure the superior quality of TCM preparations and meet international standards.

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