DOI: 10.53469/jcmp.2025.07(01).31

Research Advancements in the Treatment of Obesity with Chinese Medicine

Yingcong Li[1], Defen Wang[2,*]

[1]Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China
[2]Xi'an Hospital of Traditional Chinese Medicine, Xi'an 712046, Shaanxi, China
**Correspondence Author*

Abstract: ***With the improvement of people's living standards and changes in lifestyle, obesity has become a global health issue. The incidence and growth rate of obesity in China top those of other countries, thus making it urgent to develop effective methods for preventing and treating obesity. Traditional Chinese Medicine (TCM) has accumulated rich experience in the long-term clinical treatment of obesity, forming advantages such as holistic concept, syndrome differentiation, and minimal side effects, which holds strong potential. In recent years, as research on TCM continues to deepen, the mechanisms and methods of TCM treatment for obesity are gradually being revealed. This article reviews TCM's understanding of obesity, the theoretical basis behind TCM treatment for obesity, clinical internal and external treatment methods, as well as existing problems and prospects, aiming to provide new ideas and methods for TCM treatment of obesity.***

Keywords: Traditional Chinese Medicine, Obesity, Treatment Methods, Clinical Research**.**

1. Understanding of Obesity

1.1 Western Medicine's Understanding of Obesity

Western medicine defines obesity as a chronic metabolic disorder characterized by excessive fat distribution or accumulation in the body, leading to a body mass index (BMI) exceeding the normal range. Clinically, BMI is commonly used to analyze the severity of obesity [1]. In China, a BMI threshold of 24.0 to 28.0 kg/m^2 is considered overweight, while a BMI of ≥28.0 kg/m^2 is considered obese. Secondly, the most common classification of obesity is simple obesity and secondary obesity. Obesity without apparent endocrine and metabolic causes is referred to as simple obesity, whereas obesity secondary to neurological and endocrine disorders such as hypothyroidism and hypercortisolism is classified as secondary obesity. Obesity not only affects appearance but is also closely related to various chronic diseases such as diabetes and cardiovascular diseases, posing serious threats to human health.

1.2 Traditional Chinese Medicine's Understanding of Obesity

In Traditional Chinese Medicine, obesity refers to a disease characterized by excessive accumulation of body fat and abnormal weight gain, often accompanied by symptoms such as dizziness, fatigue, lack of energy, and reduced mobility. The concept of obesity is documented as early as in the "Inner Canon." The "Yin-Yang Ying-Xiang Da-Lun" describes "a person who is fat and noble" and "at fifty, heavy in body, the ears and eyes are not sharp." The "Ling-Shu·Ni-Shun Fei-Shou" also records symptoms such as "broad shoulders, thin skin with a black hue, lips that appear swollen, blood that is dark and turbid, and qi that is stagnant and slow." The "Su-Wen·Qi-Bing Lun" posits that the etiology of this disease is "a preference for sweet and fatty foods." The "Ling-Shu·Wei-Qi Chao-Chang" categorizes [26] obesity into three types: "fat," "greasy," and "muscular." "Fat" is described in the "Shuowen Jiezi" as "having excess flesh. From meat comes fullness." "Fat" refers to a change in body shape, typically towards a larger size. Obesity refers to a change in body shape, with plump muscles and robust bones. Based on this, later generations of medical practitioners recognized that the pathogenesis of obesity is also related to innate endowments, improper diet, irregular work and rest, emotional imbalance, geographical environment, and individual constitution, among other factors. As stated in "Jing-Yue Quan-Shu·Za-Zheng-Du·Fei-Feng," obese people often have qi deficiency, while "Danxi Xinfa" and "Yi Men Fa-Lüe" believe that obese people are prone to phlegm-dampness.

2. Pathogenesis of Obesity

2.1 Spleen and Stomach Deficiency

The spleen and stomach are the foundation of postnatal nourishment and the source of qi and blood generation. As stated in the 'Book of Meridians and Collaterals' in 'The Yellow Emperor's Classic of Internal Medicine', 'Food is ingested into the stomach, where its essence and qi are absorbed and then transported to the spleen, where the spleen disperses this essence...'. The spleen plays a crucial role in transforming dietary nutrients into essence, distributing this essence, and facilitating its utilization throughout the body. If the spleen and stomach are weak, their functions in transportation and transformation may be compromised, leading to the accumulation of essence within the body, which can manifest as dampness. This dampness can then condense into phlegm, and the combination of phlegm and dampness can result in obesity [16].

2.2 Phlegm-Dampness

Improper diet, with a preference for rich and sweet foods, can impair the spleen and stomach, leading to abnormalities in digestion and absorption. Yao Ruonan [2] and colleagues posit that both phlegm and dampness are yin-excesses, often intermingled. The primary pathogenesis of obesity is the excessive accumulation of phlegm-dampness, clinically manifesting as physical obesity, fatigue, heaviness in the head

and body, and other symptoms indicative of phlegm-dampness accumulation. This accumulation of water and dampness leads to the formation of phlegm [27]. The viscous Phlegm-Dampness obstructs meridians, causing Blockade of the flow of qi and blood, ultimately resulting in obesity.

2.3 Qi Stagnation and Blood Stasis

The 'Lingshu·Counteracting Obesity and Promoting Thinness' states, 'This person is obese, with broad shoulders... sluggishness with astringency,' suggesting that poor circulation of qi and blood leads to blood stasis and qi stagnation, affecting the metabolism of body fluids, essence, and blood, ultimately resulting in obesity. Similarly, 'Lingshu·The Origin of All Diseases' states, 'Blood coagulates and accumulates within the body without dispersing, body fluids become astringent and permeate, and the accumulation persists without dispersing, leading to the formation of deposits.' Emotional imbalance, liver-qi stagnation, impaired qi flow, and blood stasis lead to blood stasis and qi stagnation, obstructing the meridians, affecting fluid metabolism and qi-blood circulation, ultimately leading to obesity.

3. Treatment of Obesity

3.1 Modern Medical Treatment for Obesity

In modern medicine, the treatment of obesity predominantly involves pharmacological and surgical approaches. Commonly used anti-obesity drugs can be broadly categorized into four types: appetite suppressants, nutrient absorption inhibitors, lipid metabolism modifiers, and energy metabolism enhancers [3]. With the deepening of research into the mechanisms of obesity, certain bioactive peptides and gene therapy drugs that affect appetite have emerged as novel treatments for obesity. For instance, there are leptin receptor activators targeting the adiposystem, neuropeptide Y receptor blockers targeting the nervous system, and G protein-coupled estrogen receptor (GPER). There are primarily two types of obesity gene therapy drugs: one is recombinant human leptin for the treatment of congenital leptin deficiency, and the other is setemelananotide, a selective MC4R activator, approved for rare monogenic obesity including LEPR, PCSK1, and POMC deficiencies.

Furthermore, obesity is influenced by the gut microbiota. Luo Yixuan [3] explored potentially bioactive compounds in probiotic fermentation, where three main strains: Lactobacillus mucilaginosus (LR), Lactobacillus plantarum (LP), and Lactobacillus fermentum (LF) all reduced the weight gain of mice, liver and fat mass to some extent, decreased the degree of adipocyte hypertrophy and liver lipid accumulation. Among them, two strains (LP and LF) significantly alleviated dyslipidemia, systemic low-grade inflammation, lactate metabolism, and cytokine abnormalities. LP also significantly reduced blood glucose levels in mice, improving their impaired glucose tolerance. Probiotics and other gut microbiota are gradually becoming the main methods for obesity treatment. Guo Wei [6] found that the blood glucose levels in the group of rats undergoing Roux-en-Y gastric bypass surgery were significantly reduced, with notable decreases in serum total cholesterol, triglycerides, and other lipid concentrations, leading to weight loss [19].

3.2 Traditional Chinese Medicine Treatment for Obesity

3.2.1 Internal Treatment for Obesity

(1) Theoretical Basis for the Treatment of Obesity with Traditional Chinese Medicine

Ancient Chinese medicine has a long and rich history, with the 'Huangdi Neijing' serving as the earliest record of obesity in traditional Chinese medicine. Through continuous development and refinement by medical practitioners over the ages, it has been recognized that obesity primarily involves visceral disorders in the liver, spleen, and kidneys, often characterized by a mixture of deficiency and excess [28]. It is believed that the liver governs the dispersal and regulation of qi, regulates emotions, and thereby adjusts the tension of the sympathetic nervous system. Therefore, treating obesity from the perspective of the liver is key. Spleen qi deficiency manifests as the fundamental deficiency, while the accumulation of phlegm-damp and greasy substances represents the superficial excess. In terms of treatment, 'Danxi Xinfang, Zhongshi' posits that obesity should be treated from both damp-heat and qi deficiency perspectives. 'Shishi Milu, Fei Zhi Fa' suggests that treating phlegm requires both qi replenishment and phlegm elimination, along with nourishing vital fire to ensure sufficient qi and eliminate phlegm. Furthermore, ancestors also recognized that obesity is associated with various diseases such as diabetes, paralysis, hemiplegia, paralysis and qi stagnation. 'Nuke Qie Yao' states, 'For obese white women with menstrual irregularities, it must be due to the obstruction of phlegm-damp and fatty membranes.' Traditional Chinese medicine treats obesity mainly by adjusting the functions of the body's organs, qi, blood, and body fluid metabolism to achieve weight loss [18].

(2) Treatment of Obesity with Single Chinese Herbal Medicine

Poria Cocos: According to the "Shennong Bencao Jing," it is recorded that Poria Cocos is known for its diuretic and dampness-eliminating properties, as well as its ability to strengthen the spleen, calm the mind, and soothe the nerves. It is associated with the spleen, heart, kidney, and lung meridians [13]. It tastes sweet and light. Sweet can nourish and alleviate, while light can penetrate and benefit. It possesses a mild medicinal property, supporting vital energy, expelling pathogenic factors, promoting water metabolism, and enhancing immune function. Relevant pharmacological studies have demonstrated that Poria Cocos can increase superoxide dismutase concentration, resist lipid peroxidation, lower blood lipids and blood sugar, delay aging, and exhibit anti-tumor pharmacological effects [23].

Atractylodes macrocephala: According to 'Medical Origin', it is described as 'eliminating dampness and promoting dryness, harmonizing the middle energizer and replenishing qi, warming the middle energizer, removing dampness from the spleen and stomach, dispelling stomach heat, strengthening the spleen and stomach, promoting digestion, harmonizing the stomach, and generating body fluid.' Atractylodes

macrocephala nourishes qi, strengthens the spleen, dries dampness, promotes diuresis, stops sweating, and induces labor. Extracts from Atractylodes macrocephala contain various active ingredients such as volatile oils, polysaccharides, and lactones, and exhibit pharmacological effects including improving gastrointestinal function, regulating immunity, modulating hormone secretion, antioxidation, and antitumor activity [17].

Hawthorn: The "Tang Ben Cao" records hawthorn as "tasting sour, cold, and non-toxic." It is known for its ability to aid digestion, resolve stagnation, and remove blood stasis. Numerous studies have shown that flavonoids in hawthorn are involved in biological processes such as bile acid biosynthesis, histidine metabolism, and lipid metabolism. Its active components may directly act on adipose tissue, promoting fat decomposition and metabolism. Tuo Wenjuan [4] and colleagues found that hawthorn and its extracts can effectively reduce serum levels of total cholesterol, triglycerides, and low-density lipoprotein cholesterol, while increasing high-density lipoprotein cholesterol levels.

Alismatis Rhizoma: According to the Compendium of Materia Medica, it is described as "dispersing damp-heat, resolving phlegm-fluid, stopping vomiting, treating diarrhea, alleviating colic, and curing athlete's foot." Alismatis Rhizoma has the effects of promoting diuresis to eliminate dampness, clearing heat, resolving turbidity, and lowering lipids. Its modern pharmacological actions primarily include diuresis, lipid-lowering, hypoglycemic effects, and anti-inflammatory actions [5].

(3) Treatment of Obesity with Traditional Chinese Medicine Prescriptions

Modified Shenlingbaizhu Powder: Originating from the "Taiping Huimin Heji Bureau Prescription", it consists of ginseng, atractylodes macrocephala, tuckahoe, yam, lotus seed, coicis semen, white hyacinth bean, amomi fructus, platycodon grandiflorum, and liquorice [7]. It is effective in strengthening the spleen and replenishing qi, as well as promoting diuresis and stopping diarrhea. Modern clinical studies indicate that traditional Chinese medicine believes obesity is often associated with dysfunction in the spleen and stomach's transformation and dampness retention. Shenlingbaizhu Powder can enhance the spleen's transformation, improve the spleen and stomach functions of obese patients, allowing nutrients and other substances to be distributed normally, reducing the accumulation of phlegm-dampness, and thus leading to weight loss [8].

Modified Fangfeng Tongsheng Powder: Recorded in the 'Xuanming Lunfang', its composition includes rhubarb, mirabilite, catnip, ephedra, forsythia, peppermint, gardenia, scutellaria, gypsum, platycodon, atractylodes, angelica, ligustilide, peony, talc, ginger, and jujube. Saposhnikoviae Radix Tongsheng Powder is designed to unblock the triple warmer, disperse wind and resolve exterior syndrome, and clear heat and promote purging. It functions by regulating the body's qi-blood and body fluid metabolism, facilitating the expulsion of pathogenic products such as damp-heat and phlegm-dampness, thereby achieving a weight loss effect. Modern research has found that obesity is often associated with intestinal flora disruption, leading to abnormal fat metabolism and increased energy absorption by the body. Zhang Fan [9] believes that certain components in Saposhnikoviae Radix Tongsheng Powder can effectively modulate the structure and function of the gut microbiota, promoting the growth of beneficial bacteria and inhibiting the proliferation of harmful bacteria. This, in turn, improves the gut microecological environment, regulates body metabolism, and ultimately achieves weight loss.

Linggui Zhugan Decoction, derived from the "Synopsis of Prescriptions for Golden Chamber," is composed of Poria cocos, Cinnamomum cassia twig, Atractylodes macrocephala, and Glycyrrhizae radix [29]. This prescription is effective in warming the yang to transform fluid and strengthening the spleen to eliminate dampness. The decoction heavily utilizes the sweet and bland Poria cocos as the primary herb, strengthening the spleen and promoting fluid elimination; Cinnamomum cassia twig warms the yang to transform fluid as the secondary herb; and Atractylodes macrocephala dries dampness and strengthens the spleen as the adjuvant herb. The combination of the primary and secondary herbs warms the yang to transform fluid and dispel dampness. Atractylodes macrocephala and Poria cocos complement each other, rendering the entire prescription warm yet not dry, beneficial yet not harsh. It addresses both the symptoms and root causes, making it a classic prescription for treating obesity due to spleen deficiency and dampness retention. Li Huimin [10] et al. found that Atractylodes macrocephala and roasted Glycyrrhizae radix can strengthen the spleen and qi, enhancing the digestive and absorptive functions of the spleen and stomach. This allows for the full digestion and absorption of energy from food and its proper transformation and utilization, preventing excess nutrients from accumulating as fat. Additionally, by regulating the spleen and stomach, it improves their ability to transport fluid, preventing dampness from stagnating and causing obesity.

Modified Erchen Decoction: According to "Yi Fang Ji Jie," "Chenpi (dried orange peel) and Pinellia ternate are valued for their long-term aging, which eliminates the concern of drying and dispersing. The two herbs in the formula, Pinellia ternate and Juhong (dried tangerine peel), are preferably aged, hence the name 'Erchen,' which is a basic formula for dampness-drying and phlegm-resolving." Zhu Danxi believed that phlegm can lead to the occurrence of various diseases, thus proposing that "for those who are corpulent and fair-skinned, there must be excessive dampness and phlegm; Erchen Decoction can eliminate their dampness," making Erchen Decoction the basic formula for treating obesity. Modern pharmacological studies have found that Chenpi contains volatile oils that promote gastrointestinal motility, while the polysaccharides in Poria cocos have a certain immune regulatory effect, enhancing the body's absorption and utilization of drugs. Zhao Chunyan conducted [11] a complex network analysis of ancient prescriptions for obesity treatment, identifying the core prescription as Erchen Decoction plus Baizhu (Atractylodes macrocephala), which strengthens the spleen to eliminate dampness and phlegm while enhancing the dampness-eliminating and phlegm-resolving effects of Erchen Decoction. Studies have found that Erchen Decoction can reduce the four levels of blood lipids, improve lipid metabolism, regulate glucose

metabolism, and significantly improve obesity through multi-target and multi-site actions [12].

3.3 External Treatment Methods for Obesity

Electroacupuncture therapy involves the application of pulsed current stimulation to filiform needles based on the sensation of deqi, thereby enhancing the sensation of deqi and achieving a sustained stimulation of acupoints. It can, to some extent, replace manual acupuncture techniques. Numerous clinical and experimental studies have confirmed the effectiveness of electroacupuncture in treating simple obesity. When combined with dialectical and localized point selection, such as needling at Zhongwan, Fenglong, Zusanli, and Tianshu, electroacupuncture can effectively promote spleen function, eliminate dampness, and clear the intestines, thereby achieving the goal of weight loss [30].

Acupoint catgut embedding therapy exerts its therapeutic effect by continuously inhibiting the damaging stimuli of visfatin in visceral adipose tissue, thereby enhancing body surface temperature and lipid metabolism, and prolonging and intensifying the stimulatory effect for treating obesity. Clinically, the traditional catgut suture used in acupoint embedding has been replaced with low-risk polymer bio-threads, significantly enhancing safety and efficacy. Moreover, for patients who find frequent acupuncture sessions intolerable, compliance can be effectively improved. Commonly selected acupoints include Tianshu, Zhongwan, Zusanli, Yinlingquan, Fenglong, as well as other thoracoabdominal acupoints. The frequency of treatments is generally every 5 to 21 days, with the thread typically embedded deep into the fat or muscle layer. It is not recommended for individuals under 18 years old or those over 65 years old to undergo catgut embedding therapy [21].

Moxibustion, as one of the traditional therapies in Chinese medicine, possesses the effects of warming meridians to dispel cold and invigorating yang to prevent prolapse. The method for treating obesity primarily involves reducing the body's L-valine levels, regulating amino acid levels within the body to promote lipid metabolism, and enhancing the digestive function of the gastrointestinal tract, thereby achieving effective therapeutic effects. Through researching and compiling a database of publicly available clinical research literature on the use of moxibustion for the treatment of simple obesity by scholars both domestically and internationally up to May 2022, Song Fan [20] analyzed and concluded that the top three acupoints in terms of frequency of use are Guanyuan, Zusanli, and Zhongwan, with the selected acupoints primarily belonging to the Ren meridian, the Foot Yangming Stomach Meridian, and the Foot Taiyang Bladder Meridian.

Cupping therapy, historically known as "Jiao method," has been documented in the "Fifty-two Prescriptions for Diseases" as early as ancient times. It involves creating negative pressure within a cup through methods such as suction or combustion, allowing the cup to adhere to the body surface. This results in congestion and ecchymosis at the point of attachment, thereby promoting qi circulation, blood activation, and meridian and collateral unblocking. Over time, the materials and methods used in cupping have been continuously refined, utilizing the specific changes induced by negative pressure in local tissue structures to prevent and treat diseases. Recent studies have shown that cupping can enhance metabolic activity, reduce levels of obesity-related inflammatory factors, and modulate the expression of pro-inflammatory cytokines, ultimately aiding in weight loss [22].

4. Problems and Outlook

4.1 Challenges in Obesity Treatment

Currently, the methods employed by Western medicine for weight loss broadly include lifestyle intervention, oral medications, and surgical procedures. Regarding oral medications, drugs such as Sibutramine, Orlistat, and Metformin have significant toxic side effects [24]. Specifically, they are highly likely to cause severe gastrointestinal dysfunction and induce endocrine disorders. Moreover, their effectiveness in weight loss is difficult to maintain over a long period, often leading to weight regain. Surgical methods for weight loss, such as liposuction, arterial embolization, and balloon therapy, all involve a certain degree of invasiveness and can also cause numerous adverse effects on the patient's body.

Although certain research achievements have been obtained in the mechanism of traditional Chinese medicine (TCM) in treating obesity, overall, the depth of these studies is still inadequate [14]. There are issues such as small sample sizes in clinical research and a lack of large-scale randomized controlled trials [25]. The characteristic of TCM is syndrome differentiation and treatment based on that differentiation. However, clinicians do not have the same syndrome differentiation for different patients. Although there is a lack of a unified theory of action, the efficacy is evident to all [15]. Therefore, it is necessary to conduct more in-depth and detailed exploration of the effects of TCM on various aspects such as obesity-related signaling pathways, gene expression, and gut microbiota, in order to provide more scientific and solid theoretical support for the use of TCM in the field of obesity treatment. In addition, the quality of traditional Chinese medicine is easily affected by factors such as production location, harvesting season, and processing methods. There are still some issues with quality control measures, such as pesticide residues and excessive heavy metals, which can potentially affect the efficacy and safety of traditional Chinese medicine in treating obesity.

4.2 Prospects

Conduct multi-center, large-sample, randomized controlled clinical studies to enhance the quality and level of research. Utilize modern scientific technologies to further investigate the mechanisms of traditional Chinese medicine in treating obesity related to signaling pathways, gene expression, and gut microbiota, and establish unified diagnostic and treatment standards for traditional Chinese medicine. Strengthen comprehensive management of traditional Chinese medicine to ensure its safety and quality.

References

[1] Yu Bi, Chang Lv, Yanpeng Dai. Effects of Hawthorn Flavonoids on Intestinal Microbial Community and Metabolic Phenotype in Obese Rats [J]. Advances in Biology,2024-01-12.
[2] Yao Ruonan, An Chunping. Understanding of Obese People with Phlegm-Dampness Constitution in Traditional Chinese Medicine [J]. Progress in Clinical Medicine, 2023, 13(1): 331-336.
[3] Wang Zixuan, Xue Qiongwen, Luo Yixuan, et al. Research progress on mechanisms of traditional Chinese medicine in improving obesity and its related metabolic diseases through gut microbiota [J]. Shanghai Journal of Traditional Chinese Medicine, 2023, 57 (2):1-7.
[4] Tuo Wenjuan, Liu Yongqi, Xiu Minghui. Research on Hawthorn and Its Active Ingredients in the Treatment of Metabolic Syndrome [J]. Chinese Journal of Basic Medicine in Traditional Chinese Medicine, 2022, 1(1): 1-1.
[5] Zhang Weijun, Han Dongwei, Li Ji. Research Progress on Chemical Constituents and Pharmacological Effects of Alisma orientalis [J]. Acta Chinese Medicine and Pharmacology, 2021, 49(12): 98-102.
[6] Guo Wei. Experimental Study on the Effect of Roux-en-Y Gastric Bypass Surgery on Renal Gluconeogenesis in Obese Rats [D]. Chongqing Medical University, 2017.
[7] Wang Hui, Liu Aifeng, Zhang Liting. Clinical Observation of Modified Shenling Baizhu Powder in the Treatment of Obesity [J]. Journal of Emergency in Traditional Chinese Medicine, 2018, 27(12): 2210-2212.
[8] Li Huimin, Wang Hongxia, Yu Xiaohong. Exploration of the Mechanism of Shenling Baizhu Powder in the Treatment of Obesity Based on Network Pharmacology [J]. China Pharmacy, 2021, 32(22): 2701-2706.
[9] Zhang Fan, Huang Yuzhu, Li Jianmin. Analysis of the Potential Mechanism of Fangfeng Tongsheng Powder in the Treatment of Obesity Based on Network Pharmacology [J]. Chinese Traditional Patent Medicine, 2022, 44(05): 1527-1532.
[10] Li Huimin, Wang Hongxia, Yu Xiaohong. Exploration of the Mechanism of Linggui Zhugan Decoction in the Treatment of Obesity Based on Network Pharmacology [J]. China Journal of Traditional Chinese Medicine and Pharmacy, 2021, 36(08): 4853-4858.
[11] Zhao Chunyan, Zhan Libin, Zhao Tian, et al. Exploration of the Mechanism of Erchen Decoction in the Treatment of Obesity and Experimental Verification Based on Network Pharmacology [J]. Pharmacology and Clinics of Chinese Materia Medica, 2022, 38(01): 24-31.
[12] Long Weiyang. Study on the Mechanism of Erchen Decoction on Chemerin/CMKLR1 in the Liver Tissue of Obese Mice [D]. Fujian University of Traditional Chinese Medicine, 2024.
[13] Huang Congliang, Zheng Jiali, Li Fenglin, et al. Study on the Hypoglycemic Effect of Poria Polysaccharide on Type II Diabetic Mice [J]. Food Research and Development, 2016, 37(4): 21-25.
[14] Fang Zebin. Exploration of Professor Li Huilin's Experience in the Treatment of Simple Obesity and Preliminary Study on the Mechanism of the Core Prescription - Jianwei Didang Decoction [D]. Guangzhou University of Chinese Medicine, 2023.
[15] Lei Shubo. Analysis of the Medication Rules and Experience Summary of Professor Ma Jian in the Treatment of Simple Obesity by Traditional Chinese Medicine [D]. Heilongjiang University of Chinese Medicine, 2023.
[16] Liu Haiyang. Meta-analysis of Chinese Medicines for Invigorating the Spleen and Removing Dampness in the Treatment of Obesity-related Type 2 Diabetes [D]. Heilongjiang University of Chinese Medicine, 2023.
[17] Wei Haitao, Fang Qiuhua, Zhang Bingshun, et al. Research Progress on the Active Ingredients and Pharmacological Effects of Atractylodes macrocephala [J]. Guangdong Journal of Animal Husbandry and Veterinary Science, 2022, 47(6): 40-44+51.
[18] Sun Shouhua. Exploration of the Medication Rules and Mechanisms of Chinese Medicines in the Treatment of Obesity Complicated with Hypertension Based on Data Mining and Network Pharmacology [D]. Liaoning University of Traditional Chinese Medicine, 2023.
[19] Qu Ping. Analysis of the Pharmacological Targets of Modified Bupleurum Shugan Powder and Jiamai Jiangxiangru in Improving Obesity-related Depression and Its Influence on Intestinal Flora [D]. Jiangxi University of Traditional Chinese Medicine, 2023.
[20] Song Fan, Ren Yuanyuan, Ma Wenxin, et al. Meta-analysis of the efficacy of moxibustion in treating simple obesity [J]. Journal of Cardiovascular and Cerebrovascular Diseases in Integrated Traditional Chinese and Western Medicine, 2024, 22 (17): 3111-3116.
[21] Zhou Wei, Zhou Zhongyu, Hu Feng, et al. Clinical Comparative Study of Electroacupuncture and Acupoint Catgut Embedding Therapy in the Treatment of Simple Obesity [C]//China Association of Acupuncture - Moxibustion. New Era, New Thinking, New Leap, New Development — Proceedings of the 2019 Annual Meeting of China Association of Acupuncture - Moxibustion and 40th Anniversary Review. [Publisher Unknown], 2019: 7.
[22] Chen Lili, Zhong Weijia, Wang Yimeng, et al. Exploration of Cupping Intervention in Simple Obesity Based on Inflammatory Correlation [J]. Acta Chinese Medicine, 2021, 36(5): 989-993.
[23] Zuo Jun, Qi Tianli, Hu Xiaoyang. Research Progress on Chemical Constituents and Modern Pharmacology of Poria cocos [J]. Acta Chinese Medicine and Pharmacology, 2023, 51(1): 110-114.
[24] Leitner DR, Frühbeck G, Yumuk V, et al. Obesity and type 2 diabetes: two diseases with a need for combined treatment strategies - EASO can lead the way [J]. Obesity facts, 2017, 10(5):483-492.
[25] Niu Changmiao, Yan Xiaoning, Yin Yongkai, et al. The Inflammatory Mechanism of Simple Obesity and the Research Progress of Integrated Traditional Chinese and Western Medicine Treatment [J]. Chinese Pediatrics of Integrated Traditional and Western Medicine, 2024, 16(05): 404-409.
[26] Liu Xinran. Analysis of "Shuowen Jiezi · Meat Part" [J]. Journal of Weifang University, 2012, 12(03): 30-33.
[27] Li Jiaxin, Zhang Yi, Li Bin, et al. Analysis of the Pathogenesis of "Overwork Obesity" from the Liver, Spleen and Kidney [J]. Global Traditional Chinese Medicine, 2021, 14(04): 624-626.

[28] Han Han, Liu Chunhua. Liu Chunhua's Experience in Treating Metabolic Syndrome from the Liver and Spleen [J]. Hunan Journal of Traditional Chinese Medicine, 2018, 34(2): 30-31.
[29] Min Shan, Chen Hongyan. Clinical Observation of 28 Cases of Metabolic Syndrome of Spleen Deficiency and Phlegm-dampness Type Treated by the Method of Invigorating the Spleen, Removing Dampness and Resolving Phlegm [J]. Hunan Journal of Traditional Chinese Medicine, 2021, 37(2): 37-39.
[30] Wang Yayuan, Liang Fengxia, Chen Li, et al. Effects of Electroacupuncture at Different Acupoint Combinations on Gastrointestinal Motility and Related Hormones in Obese Rats [J]. Acupuncture Research, 2020, 45(11): 875-881.