

# Exploration of the Temporal-Zangfu Synergistic Regulation Strategy for Sjögren's Syndrome Based on the Theory of “Liver-Kidney Homogeneity – Spleen Governing Temporal Sequence”

Yali Ma<sup>1</sup>, Huifang Yue<sup>1</sup>, Lina Wang<sup>2,\*</sup>

<sup>1</sup>Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

<sup>2</sup>Baoji Hospital of Traditional Chinese Medicine Affiliated to Shaanxi University of Chinese Medicine, Baoji 721000, Shaanxi, China

\*Correspondence Author

**Abstract:** *Sjögren's Syndrome (SS) is an autoimmune disease characterized by the progressive damage of exocrine glands. The exploration of its pathogenesis and treatment strategies has been increasingly in-depth in both traditional Chinese medicine (TCM) and Western medicine. This article elaborates from four aspects: theoretical origin, pathogenesis analysis, treatment strategies, and controversies & prospects, aiming to explore the integration potential of regulating the liver, spleen, and kidney in synergy with TCM chronomedicine for the treatment of SS. (1) Theoretical Mechanism: This part explains the synergistic relationship between “mutual transformation of liver-kidney essence and blood” and “spleen governing the rhythm of body fluid transportation and distribution”, and proposes the core pathogenesis system of SS as “liver-kidney yin deficiency and spleen failing to govern the temporal sequence”. (2) Pathogenesis and Treatment Principle: It discusses that the pathogenesis of SS is related to “liver-kidney yin deficiency, spleen dysfunction in temporal sequence”, as well as the time of day and seasons, and determines the treatment principle of “nourishing the liver and kidney, and invigorating the spleen to regulate the temporal sequence”. (3) Therapeutic Application: This section summarizes and analyzes the application of time-selected acupuncture, moxibustion, Chinese materia medica (CMM) targeting the three meridians of the liver, spleen, and kidney, as well as four-season health preservation in improving the therapeutic effect for SS patients. (4) Controversies and Prospects: It points out the existing problems in current studies, such as the lack of standardized protocols for the optimal treatment time. Furthermore, it proposes to strengthen the integrated TCM-Western medicine research and promote the construction of an individualized temporal treatment system for SS. This article provides a theoretical basis and transformation direction for the TCM treatment of SS, and highlights the unique value of TCM chronomedicine in the management of chronic diseases.*

**Keywords:** Sjögren's Syndrome; Liver-Kidney Homogeneity; Spleen Governing Temporal Sequence; TCM Chronomedicine; Review.

## 1. Introduction

Sjögren's syndrome (SS) is a chronic, autoimmune disease that chiefly invades the exocrine glands—especially the salivary and lacrimal glands—manifesting with lymphoproliferation, progressive destruction of exocrine tissue, and the presence of autoantibodies [1,2]. The typical clinical pattern is characterized by dryness (zào), fatigue (pí láo), and musculoskeletal pain (jī gǔ téng tòng); systemic manifestations may also emerge. SS is classified as either primary or secondary. When the syndrome occurs in isolation, it is termed primary Sjögren's syndrome (pSS); when it develops on the background of another well-defined connective-tissue disease—e.g., rheumatoid arthritis, systemic lupus erythematosus, or dermatomyositis—it is designated secondary SS [3]. Epidemiological surveys indicate that the disease predominantly affects middle-aged and elderly women. In China its prevalence ranges from 0.33 % to 0.77 % [1], and Chinese patients with pSS demonstrate a significantly higher rate of visceral organ involvement than those in other countries [4]; those with severe multi-system damage may face life-threatening complications [5]. Current diagnosis integrates symptomatology, clinical signs, histopathology, and autoimmune serology; hallmark markers include anti-Ro/SSA, anti-La/SSB, and antinuclear antibodies [6]. No specific cure exists. Western medicine remains largely symptomatic, encompassing local measures (artificial tears, saliva substitutes, intense-pulsed-light therapy) and systemic agents (glucocorticoids, immunosuppressants, biologics)

aimed at alleviating symptoms, controlling systemic injury, and modulating immune function. Nevertheless, therapeutic outcomes are unsatisfactory: randomized controlled trials and meta-analyses have yet to demonstrate significant efficacy for biologics or immunosuppressants in SS [3].

From the perspective of Traditional Chinese Medicine (TCM), SS falls within the category of “dryness impediment” (zào bi). Comprehensive TCM interventions occupy an irreplaceable role; clinical studies reveal unique advantages in improving symptoms and retarding disease progression, with broad applicability [7]. The Ling Shu (“Divine Pivot”) states: “At fifty, liver qi first wanes, the hepatic lobes become thin, bile diminishes, and vision blurs. At sixty, heart qi begins to decline, melancholy arises, blood and qi become sluggish, hence somnolence increases. At seventy, spleen qi is vacuous and the skin withers.” These passages illustrate that with advancing age—particularly in the elderly—visceral qi gradually exhausts; liver-kidney yin becomes deficient, the spleen fails in its transportive and transformative functions, and the zang-fu organs and their orifices can no longer be properly moistened, giving rise to dryness impediment. Recent investigations [8] have demonstrated that most rheumatic diseases exhibit seasonal and circadian rhythms; therapeutic outcomes are superior when treatment is timed in accordance with these rhythms (yīn shí zhì yí). Integrating the TCM doctrine of visceral manifestation (zàng xiàng), we posit that the spleen exerts a dominant regulatory role over the five zang-organs. Therefore, this article explores the optimal

chronotherapeutic strategy for SS based on the theoretical framework “liver and kidney share a common source; the spleen governs temporal order,” aiming to maximize clinical efficacy, control disease progression, and enhance patients’ quality of life.

## 2. Theoretical Roots

### 2.1 The Connotation of “Liver and Kidney Sharing a Common Source” (Yǐ-Gùi Tóng Yuán)

The axiom “liver and kidney share a common source,” also termed “Yǐ-Gùi Tóng Yuán”, first emerged in the *Huangdi Neijing·Suwen·Yinyang Ying Xiang Da Lun* states: “The kidney engenders marrow, and marrow engenders the liver,” establishing the mother-child relationship between the two viscera. In the Ming dynasty, Li Zhong-zi correlated the ten heavenly stems with the five phases and the zang-organs, proposing in *Yizong Bidu* that “the kidney corresponds to Northern Ren-Gùi, the liver to Eastern Jia-Yǐ...”—hence the dictum “Yǐ-Gùi share one source; liver and kidney are treated as one” [9].

This concept embraces three interlocking dimensions:

(1) Essence-blood homology (Jīng-Xuè Tóng Yuán). Zhang Lu (Qing dynasty) wrote in *Yitong*: “When qi is not dissipated, it returns to the kidney as essence; when essence is not lost, it returns to the liver and is transformed into lucid blood.” Wu Jutong further noted: “The Shaoyin stores essence; only when the Shaoyin essence is abundant can the Jueyin be engendered.” The kidney stores essence (Jīng), the liver stores blood (Xuè); materially they stem from a single source and mutually engender one another [10].

(2) Mother-child engenderment (Zǐ-Mǔ Xiāng Shēng). Huai Bao-qi remarked in *Gujin Yiche*: “The North pertains to water, and water begets wood—thus Yǐ and Gùi share the same source.” *Yizong Bidu·Yǐ-Gùi Tóng Yuán Lun* adds: “Wood of the East cannot be tonified when vacuous; tonifying the kidney is therefore the way to tonify the liver... strengthening the source of water, the wood then flourishes.” The liver is designated Yǐ-wood, the kidney Gùi-water; by the generative cycle of the five phases the kidney (water) is the mother of the liver (wood), and kidney-water can nourish liver-wood [11].

(3) Mutual nourishment of yin and yang (Yīn-Yáng Xiāng Jí). *Gezhi Yulun* states: “That which presides over storage is the kidney; that which governs free coursing is the liver.” Both viscera reside in the lower burner (Xiā-Jiāo). The kidney governs storage and sealing; the liver governs free coursing and discharge. Their functions complement each other, yin and yang mutually support the ministerial fire [12]. Via storage and discharge they regulate the heavenly-gui (Tiān-Gùi) essence-qi, propelling human growth and development. *Linzhen Zhinan Yí'an* summarizes: “The liver is a wood-viscus of wind, harboring ministerial fire within. Substantially yin, functionally yang, its nature is firm, active, and ascending, entirely dependent on kidney-water to moisten it and on blood to nourish it.” The liver’s yang relies on kidney-yin for moistening and restraint, while being rooted in kidney-yang for warming support.

Hence, in clinical practice the therapeutic principles “tonify and supplement liver and kidney,” “treat liver and kidney simultaneously,” and “enrich water to moisten wood” (Zī Shuǐ Hán Mù) are widely applied.

### 2.2 The Connotation of “the Spleen Governs Temporal Order” (Pí Zhǔ Shí Xù)

#### 2.2.1 Spatial centrality of the spleen

Among the five zang-viscera the spleen occupies the pivotal position. *Lingshu Jing-Shunqi Yi Ri Fen Sishi* (“Miraculous Pivot: Harmonising Qi—Dividing the Day into the Four Seasons”) states: “The spleen is the yin viscus [pin-zang]” [13]. “Yin” (pin) denotes the feminine, the receptive, the earth; it contrasts with the masculine “yang” (mu) viscus and implies that the spleen is mother-like, yin in nature, and linked to Kun-Earth. *Suwen·Yinyang Ying Xiang Da Lun* further calls the spleen “the viscus of ultimate yin [zhiyin]” [14]. Ultimate yin encompasses the primordial images of heaven–earth, water–fire, and yin–yang, underscoring the spleen’s role in governing blood, transporting and transforming fluids, and serving as the hinge between the yang chest and the yin abdomen [15].

The spleen is also named the “solitary viscus” (gu-zang). Yang Shang-shan remarked: “Solitary implies supreme uniqueness; among the five phases, earth alone is honoured, flourishing in all four seasons” [16]. Wang Bing added: “It receives water and grain, transforms them into fluids, and irrigates the liver, heart, lung and kidney” [17]. Being “earth in the centre”, the spleen “communicates with the qi of soil”; earth is the root of growth and maturation for the myriad things. Occupying the centre, the spleen nourishes the four directions and is thus “the granary official” (canglin zhi guan). Food and drink enter the stomach; the essence overflows and rises to the spleen; spleen-qi disseminates the essence—“the dwelling place of nutritive qi”. The spleen is the body’s blood reservoir and the mother of the hundred bones; all viscera and tissues receive their qi from spleen-earth and thereby acquire a solid material foundation [18,19].

#### 2.2.2 Temporal primacy of the spleen

The theory of “the spleen governing time” (pí zhǔ shí) has two historic interpretations

##### (1) Governing the four seasons

This idea can be traced to the political philosophy of “assisting the seasons” (wushi ji zheng). *Guanzi·Sishi* notes: “The centre is called earth; the virtue of earth truly assists the entry and exit of the four seasons, harmonising wind and rain... Earth strengthens the skin and flesh; its virtue is peaceful and impartial, and thus it supports the four seasons” [20]. Earth, positioned centrally, assists rather than monopolises the seasons.

##### (2) Governing the final eighteen days of each season

*Baihutong Shuzheng* states: “Earth reigns for eighteen days at the end of each season... Without earth wood cannot grow, fire cannot blaze, metal cannot be formed, water cannot rise.

Earth supports the weak and completes the cycle; therefore the five phases alternate in reign, yet all depend on earth” [21]. Hence the notion that spleen-earth lodges at the close of each season derives from its central role and its flourishing throughout the year.

Whether expressed as “governing all four seasons” or “governing the final eighteen days of each season”, the two formulations share a common spatial logic: earth occupies the centre and commands the four directions, engenders the four phases, nourishes the four viscera, and sustains the myriad things. “Governing the four seasons” emphasises the spleen’s continuous transformative function throughout the year, regulating qi-blood production and visceral activity. “Governing the final eighteen days” highlights its phase-specific regulatory role at seasonal transitions.

Accordingly, the spleen’s temporal attribute is predicated on its spatial centrality, forging a unified space-time vision of visceral manifestation (zang-xiang). This embodies the holistic and dynamic perspective of Chinese medicine and justifies the proposition that “the spleen governs temporal order” (pí zhǔ shí xù).

In Sjögren’s syndrome—manifesting as deficiency of fluids (jīn yè), impaired transportation and transformation (yùn huà), and symptoms of dry mouth, dry eyes, and dry skin—the theory of “spleen governing temporal order” underscores the spleen’s pivotal role in governing both space (the central earth) and time (the four seasons/seasonal transitions). Therapeutically, fortifying the spleen to augment qi, dispelling dampness and phlegm, and regulating immune function can restore fluid metabolism, relieve dryness-related symptoms, and improve patients’ quality of life.

### 2.3 Synergistic Relationship between “Liver-Kidney Homogeny” and “Spleen Governing Temporal Sequence”

The spleen transforms and transports the essence of food and water (shui gu jing wei), nourishes the liver and kidneys, and maintains the rhythm of body fluid metabolism. Through its transportation and transformation function (yun hua gong neng), the spleen converts the essence of food and water into Qi and blood, providing the material foundation for the liver (which stores blood, cang xue) and the kidneys (which store essence, cang jing). The spleen’s function of “dispersing essence” (san jing) maintains the liver’s metabolic function and the kidneys’ excretory function by transporting and distributing refined substances throughout the body.

The spleen flourishes in all four seasons and governs the Qi movement of the Zang-organs. Located in the middle-jiao, the spleen coordinates the physiological balance of the liver and kidneys based on the characteristic of “Earth generating all things” (tu sheng wan wu). Pathologically, stagnation of spleen Earth (pi tu yong zhi) may lead to liver Qi stagnation (gan qi yu jie) (a condition known as “wood stagnation due to Earth obstruction,” mu yu tu yong); insufficient spleen Yang (pi yang bu zu) may involve kidney Yang, resulting in disordered water metabolism. Modern studies have shown that spleen deficiency (pi xu) may affect metabolism through the “spleen-gut microbiota-macrophage” pathway, indirectly increasing the burden on the liver and kidneys [22].

Adequate liver-kidney essence and blood (gan shen jing xue chong zu) nourish the spleen Earth in return, forming a dynamic balance. Kidney Yang is “the root of Yang Qi in the whole body” (yi shen yang qi zhi gen); abundant kidney essence (shen jing chong sheng) ensures sufficient kidney Yang, which can warm spleen Yang (wen xu pi yang) and promote the spleen’s transportation and transformation function. As stated in Xue Zheng Lun (Treatise on Blood Syndromes): “The nature of Wood (corresponding to the liver) is to govern dispersion and discharge; when food Qi enters the stomach, it fully relies on the Qi of liver Wood to disperse and discharge it.” Sufficient liver-kidney essence and blood can nourish spleen Yin (zi yang pi yin) upward, preventing the spleen from becoming dry and losing moisture (pi zao shi run), thereby maintaining the spleen’s moistening and transporting function (ru run yun hua gong neng).

Therefore, in the treatment of Sjögren’s Syndrome (SS), it is not only necessary to nourish the Yin of the liver and kidneys simultaneously (tong bu gan shen zhi yin), but also important to focus on regulating the spleen (zhi pi).

## 3. Chrono-visceral Pathogenesis of Dryness-impediment (Sjögren’s syndrome)

### 3.1 Core Pathogenesis

Qi and blood circulate through the channels and collaterals to irrigate the exterior-interior, moisten the interstices, and nourish the zang-fu viscera. The aetiology and pathogenesis of dryness-impediment (zào bì) are intimately tied to the three meridians of liver, spleen and kidney.

(1) *Suwen·Xuanming Wuqi* states: “The five viscera transform humour: the heart—sweat; the lung—snivel; the liver—tears; the spleen—drool; the kidney—saliva.”

– Liver opens at the eyes, governs tears, unites with the sinews, houses the ethereal soul (hun), and belongs to lesser yang within yang.

– Spleen opens at the mouth, governs drool, unites with the muscles, houses thought (yi), and is ultimate yin within yin.

– Kidney opens at the ears and the two lower orifices, governs saliva, unites with the bones, houses will-power (zhi), and is pure yin within yin [23].

Disorders of these three viscera therefore correspond to the cardinal manifestations of Sjögren’s syndrome—dry mouth and eyes, lassitude, musculo-skeletal pain, anxiety/irritability, insomnia, etc.

(2) *Lingshu·Jingmai* further describes the trajectories:

– Spleen Foot-Taiyin starts at the great toe, ascends beside the throat, links to the tongue root and disperses below the tongue.

– Kidney Foot-Shaoyin arises below the little toe, ascends along the throat and attaches to the tongue root.

– Liver Foot-Jueyin originates at the big toe, runs posterior to the throat, connects with the ocular system, emerges at the

forehead and converges with the Governing Vessel at the vertex [23].

Thus the three meridians directly supply the mouth and eyes. When the channels are unobstructed, qi-blood and fluids ascend to nourish the orifices; when obstructed, dryness prevails.

(3) *Suwen-Shanggu Tianzhen Lun* records: “At the sixth seven-year cycle (42 years) the three yang channels decline in the upper body; the complexion withers and hair begins to whiten. At the seventh seven-year cycle (49 years) the Ren vessel becomes empty, the Chong vessel wanes, the heavenly gu is exhausted, the earth pathway is blocked, hence the form deteriorates and child-bearing ceases.” Perimenopausal women, whose liver-kidney essence is already depleted, are therefore predisposed to this disease [24].

#### Clinical translations

– Liver-yin deficiency fails to moisten the eyes → blurred vision, foreign-body sensation, dryness, photophobia.

– Kidney-essence depletion deprives the bones of marrow → arthralgia, limited mobility. Teeth, “the surplus of bone,” blacken, crumble and finally leave only residual roots—the characteristic “rampant caries.”

– Spleen governs the muscles and houses thought; spleen dysfunction presents as myalgia, anxiety, irritability, and insomnia.

(4) *Xuezheng Lun-Zangfu Bingji Lun*: “Wood governs free coursing; after food enters the stomach it relies entirely on liver-wood for discharge and transformation.” If liver-qi stagnates, fluids cannot be generated and distributed; internal dryness intensifies in a vicious cycle.

(5) *Suwen-Nidiao Lun*: “The kidney is the water viscus; it governs fluids.” Loss of water governance disrupts the body’s yin-yang balance and deranges fluid metabolism.

(6) *Leizheng Zhicai*: “Whenever liver-yin is insufficient, it must be nourished by kidney-water.” Chronic kidney-yin deficiency eventually exhausts liver-yin; the body of wood loses its moisture and liver-yang becomes hyperactive, scorching fluids.

(7) Tang Rong-chuan: “The spleen is called damp earth; when earth is moist it engenders the myriad things; when the spleen is moist it nourishes the hundred viscera.” As the postnatal root, the spleen transforms water-grain into essence, qi, blood, and fluids and conveys them throughout the body. Li Dong-yuan noted: “When qi is scant, dryness arises; in severe cases the mouth lacks saliva. Tears and fluids depend on qi to be lifted and distributed to their orifices. If qi is too weak to deliver fluids, lacrimation decreases, and the signs of dry mouth and eyes appear.” Spleen-qi deficiency may lead to dampness stagnation; the spleen cannot relay stomach fluids, resulting in dry skin, heavy limbs, and bound stools. Being the ultimate yin viscus, spleen-yin deficiency further impairs liver and kidney function, giving rise to systemic “dryness images.”

In summary, scarcity of kidney-water, malnourishment of liver-wood, and derangement of spleen sequence constitute the pivotal triad underlying the development of dryness-impediment.

#### 3.2 Seasonal and Circadian Pathological Characteristics of Sjögren’s Syndrome

The relationship between the disease activity of Sjögren’s Syndrome and time is associated with the following two aspects:

(1) Meteorological Factors: A decrease in the monthly average temperature and an increase in humidity may affect the disease activity of SS. Some studies have emphasized the role of environmental risk factors in the pathogenesis of primary Sjögren’s Syndrome (pSS) [25]. SS patients often mention in their chief complaints the impact of weather on their symptoms, believing that certain symptoms worsen in humid weather or extreme cold [26,27]. Previous research [28] has indicated that a decrease in the monthly average temperature is an independent risk factor for the disease activity of pSS. Another study [29] has shown that low environmental temperatures and high relative humidity can increase the expression of inflammatory factors in articular cartilage, including VEGF and IL-1, which may also affect the occurrence, pathological process, and severity of pSS in patients. Therefore, especially in cold weather, an increase in humidity may exacerbate joint pain and inflammatory responses. It is recommended that SS patients maintain a warm and dry living environment.

(2) Circadian Rhythm: According to the literature review, symptoms of Sjögren’s Syndrome, such as dry mouth, dry eyes, and joint pain, usually worsen at night [30], which is consistent with the TCM theory of “being refreshed in the morning, at ease during the day, aggravated in the evening, and severely worsened at night.” There are also studies showing that nighttime and early morning may be the periods when the symptoms of Sjögren’s Syndrome are most obvious, which is related to the elevated levels of pro-inflammatory cytokines (such as TNF- $\alpha$  and IL-6) at night [31]. The circadian rhythm of SS indicates that compared with traditional drug administration times, administering treatment before the outbreak of SS symptoms, that is, at night, may enhance the therapeutic effect. As stated in *Yi Guan* (The Core of Medicine), “When treating a disease, one should first determine the time and then diagnose the illness. If the disease has not yet occurred, it should be preemptively treated.”

In conclusion, Sjögren’s Syndrome is mainly characterized by circadian symptom fluctuations (such as aggravated dry mouth in the morning and obvious dry eyes at night) and seasonal attack patterns (more severe in autumn and winter when dryness prevails, and slightly relieved in spring and summer). This reveals that the disease manifestations are not static but are dynamically embedded within a larger time framework (day-night alternation, seasonal changes) and the body’s internal rhythms. Based on this, considering “time” as a multi-dimensional intervention target: the strong correlation between SS and meteorological and circadian rhythms indicates that “when to administer drugs/intervene” and “in what environmental conditions to live” are equally crucial.

Firstly, from a meteorological perspective: Recognizing that cold and humidity are potential “pro-inflammatory environments” provides patients with practical non-drug self-management strategies (such as keeping warm, dehumidifying, and exploring the possibility of seasonal migration). This also suggests that doctors should adjust treatment plans in advance or strengthen supportive treatment during specific seasons (such as autumn, winter, and the plum rain season).

Secondly, from a circadian perspective: In response to the gradually increasing inflammatory factors at night, targeted treatment should be given before they start to increase significantly (such as in the evening) to suppress the night-time inflammatory storm, thereby more significantly improving patients’ night-time and morning symptoms.

Moreover, attention should be paid to the interaction between internal rhythms and the external environment: Meteorological factors (external time cues) and circadian rhythms (internal biological clocks) do not exist in isolation. Harsh weather such as cold/humidity itself may be a “stressor” that can interfere with and even amplify the internal inflammatory rhythm by affecting the self-regulatory function of the five Zang-organs.

### 3.3 Treatment Principles

TCM chronomedicine has certain application advantages in the stages of disease etiology analysis, occurrence, progression, diagnosis, treatment, and prevention. By conforming to the laws of time, and targeting the temporal pathological changes of SS as well as the corresponding relationship between the spleen, liver, kidney meridians and specific time periods, the treatment principle of “nourishing the liver and kidney, invigorating the spleen and regulating time” is determined. This principle optimizes the timing of treatment and significantly improves the therapeutic effect.

## 4. Temporal-Zangfu Synergistic Regulation Strategies

First, the five Zang-organs correspond to the four seasons. As stated in Su Wen (Basic Questions): Yu Ji Zhen Zang Lun Pian (Treatise on the Jade Machine and True Visceral Pulses), “The pulse of spring pertains to the liver, corresponding to Wood in the east... The pulse of summer pertains to the heart, corresponding to Fire in the south... The pulse of autumn pertains to the lungs, corresponding to Metal in the west... The pulse of winter pertains to the kidneys, corresponding to Water in the north... The pulse of the spleen pertains to Earth; it is the solitary Zang-organ that irrigates the four surrounding Zang-organs.”

Second, within a single day, the abundance and decline of Qi in the five Zang-organs also change with time. The corresponding relationship between the twelve Earthly Branches (used to mark the 12 two-hour periods of a day) and the five Zang-organs is as follows: the Yin (3:00-5:00) and Mao (5:00-7:00) periods correspond to the liver; the Si (9:00-11:00) and Wu (11:00-13:00) periods pertain to the heart; the Shen (15:00-17:00) and You (17:00-19:00) periods are when lung Qi is exuberant; the Hai (21:00-23:00) and Zi

(23:00-1:00) periods correspond to the kidneys; and spleen Qi is exuberant during the Chen (7:00-9:00), Wei (13:00-15:00), Xu (19:00-21:00), and Chou (1:00-3:00) periods.

Third, according to the Zi Wu Liu Zhu (Midnight-Noon Ebb-Flow) theory—which describes the correspondence between meridians and the Qi-blood circulation rhythm across the 12 two-hour periods of a day—Qi and blood flow through the Foot-Jueyin Liver Meridian during the Chou period (1:00-3:00), the Foot-Taiyin Spleen Meridian during the Si period (9:00-11:00), and the Foot-Shaoyin Kidney Meridian during the You period (17:00-19:00).

Based on the above three aspects, the timing for regulating the liver, spleen, and kidneys is determined to optimize the treatment plan.

### 4.1 Spleen (pí)

#### (1) Hourly window

09:00–11:00 (Si-shí): Qi and blood pour into the Foot-Taiyin Spleen Channel; spleen-transforming capacity peaks.

– Pharmacological intervention: oral administration of spleen-tonic formulae such as Si Jun Zi Tang.

– Acupuncture/moxibustion: select SP-6 Sanyinjiao and SP-9 Yinlingquan.

#### (2) Seasonal window

– Year-round: Because the spleen is the “solitary viscus” that governs all four seasons, routine reinforcement of spleen-earth is permissible any time.

– Late-summer, the 18-day inter-seasonal pivot between summer and autumn: priority is on fortifying the spleen and dispelling dampness—use Shen Ling Bai Zhu San.

– Dietetics: light, warm, cooked foods; avoid raw, cold, greasy dishes.

– Lifestyle: after meals perform gentle walking to assist spleen-qi in ascending the clear and descending the turbid; prolonged sitting injures the spleen.

### 4.2 Liver (gān)

#### (1) Hourly windows

– 01:00–03:00 (Chou-shí): Liver channel at peak flow. Deep sleep ensures blood returns to the liver for storage and detoxification; insomnia or night-work readily precipitates liver-depression transforming into fire.

– 03:00–05:00 (Yín-shí): Preserve sleep to avert liver-yin consumption.

– 05:00–07:00 (Mǎo-shí): Yang qi ascends with sunrise; maintain emotional equanimity and avoid early-morning anger.

## (2) Seasonal window

- Spring: Wood-phase aligns with liver.

## (3) Daily Shen-shí (15:00–17:00) massage of LR-3 Taichong.

## (4) Morning rose-bud tea to soothe liver qi.

## (5) Moderate walking to foster yang-ascending.

## (6) Avoid repressed anger.

- Autumn–winter pivot: Metal restrains Wood; liver qi readily stagnates. Pre-emptively soften liver and nourish blood with goji berries (Gou Qi Zi) and Angelica sinensis (Dang Gui).

**4.3 Kidney (shèn)**

## (1) Hourly windows

- 17:00–19:00 (Yǒu-shí): Kidney channel commands. Ideal for moxibustion on BL-23 Shenshu and KI-3 Taixi or oral intake of Liu Wei Di Huang Wan.

- 21:00–23:00 (Hài-shí): Transition to quietude; avoid activities that consume kidney-yin.

- 23:00–01:00 (Zǐ-shí): Yin-yang pivot; early sleep seals kidney-essence. Night-owl behaviour dissipates kidney-qi.

## (2) Seasonal window

- Winter: Prime time for supplementing kidney and replenishing essence.

## (3) Concentrated paste formulae, lamb stews, or kidney-tonic medicinal diet.

## (4) Moxibustion on CV-4 Guanyuan and GV-4 Mingmen.

## (5) Morning intake of black foods (black soybean, mulberry) to enrich kidney-yin.

**4.4 Integrated Protocol**

Synchronising hourly, daily, and seasonal rhythms, the clinician combines:

## (1) Spleen-fortification at Sì-shí + late-summer.

## (2) Liver-regulation during Chǒu-shí + spring.

## (3) Kidney-supplementation at Yǒu-shí + winter.

By aligning pharmacology, acupuncture, diet, and lifestyle with these chrono-visceral windows, the therapy leverages natural biorhythms, enhances drug-targeting efficiency, and mitigates Sjögren-related flare-ups in response to diurnal and seasonal changes.

**5. Discussion and Prospects**

Recognizing the profound connection between Sjögren's

Syndrome (SS) disease activity and meteorological as well as circadian rhythms, the management of SS has been expanded from a purely “spatial” dimension (target organs, targets) to a “temporal” dimension. This requires us to actively embrace the concept of chronotherapeutics, explore optimized treatment strategies based on biological rhythms, integrate the temporal perspective of traditional medicine with modern scientific findings, and conduct more in-depth mechanistic research and clinical practice innovations.

The temporal-Zangfu synergistic regulation in the treatment of SS focuses on seasons, circadian rhythms, and the laws of Qi-blood circulation in Zang-organs. It enhances therapeutic effects through time-selected medication administration, acupuncture-moxibustion, and four-season health preservation, while achieving holistic regulation and reducing the side effects of Western medicine. However, there are limitations: there is a lack of systematic syndrome differentiation and treatment protocols targeting circadian rhythms or seasonal changes; relevant clinical studies are insufficient, resulting in a shortage of evidence-based medicine support. Although traditional Chinese medicine (TCM) emphasizes the “correspondence between human and nature” (tian ren xiang ying), standardized guidance has not yet been formed for specific medication timing (such as chronotherapy and seasonal conditioning).

Looking forward, we can combine modern chronobiology to explore the relationship between body fluid metabolism and time in SS patients. Meanwhile, it is necessary to strengthen integrated TCM-Western medicine research, integrate hormone secretion rhythms with the pharmacodynamics of Chinese materia medica (CMM), and understand the 24-hour human pathophysiological pattern of SS—this will help investigate its potential circadian rhythms, other endogenous mechanisms, and external triggering times, thereby optimizing treatment timing and improving therapeutic effects.

Therefore, multi-center clinical trials should be conducted to verify the value of chronomedicine theory in the long-term management of SS. This is expected to bring more effective and humanized disease management and quality of life improvement to SS patients.

**References**

- [1] Zhang W, Li XM, Xu D, et al. Diagnostic and treatment guidelines for primary Sjögren's syndrome [J]. Chinese Journal of Internal Medicine, 2020, 59(4): 269-270.
- [2] Ramos-Casals M, Brito-Zerón P, Bombardieri S, et al. EULAR recommendations for the management of Sjögren's syndrome with topical and systemic therapies [J]. Annals of the Rheumatic Diseases, 2020, 79(1): 3-18.
- [3] Jiang Q, Zhou XY, Tang XP, et al. Guidelines for the diagnosis and treatment of Sjögren's syndrome based on the integration of disease and syndrome [J]. Journal of Traditional Chinese Medicine, 2024, 65(4): 434-444.
- [4] Yan SM, Zhang W, Li MT, et al. Clinical analysis of 573 cases of primary Sjögren's syndrome [J]. Chinese Journal of Rheumatology, 2010, 14(4): 223-227.

[5] Li ZG, Zhang FC, Zeng XF. Rheumatology and Immunology [M]. Beijing: People's Military Medical Press, 2014: 108-117.

[6] Seror R, Nocturne G, Mariette X. Current and future therapies for primary Sjögren's syndrome [J]. *Nature Reviews Rheumatology*, 2021, 17(8): 475-486.

[7] Guo ZL, Tang XP, Xu HD, et al. Investigation and analysis of traditional Chinese medicine use in 626 patients with Sjögren's syndrome [J]. *Chinese Journal of Information on Traditional Chinese Medicine*, 2022, 29(6): 115-119.

[8] Huang HY, Chen LJ, Wang LL, Wang X. Correlation between disease activity of primary Sjögren's syndrome and meteorological factors [J]. *Journal of Bengbu Medical College*, 2025, 50(1): 111-114.

[9] Zhao XC, Yu J. Exploring the pathogenesis and treatment of Sjögren's syndrome based on the theory of "liver and kidney sharing the same origin" [J]. *Henan Traditional Chinese Medicine*, 2024, 44(12): 1803-1807.

[10] Li XQ, He JC. Tracing the origin of the theory of "liver and kidney sharing the same source" [J]. *Western Journal of Traditional Chinese Medicine*, 2019, 32(9): 45-49.

[11] Zhu H, Mou SM. Treatment of perimenopausal dry eye syndrome based on the theory of "Yī-Gùi sharing the same origin" [J]. *Guangming Journal of Chinese Medicine*, 2023, 38(12): 2268-2271.

[12] Ao HQ, Zhu YF, Xu ZW. Elucidation of the connotation of the mutual use of "storage and discharge" between liver and kidney [J]. *Jiangsu Journal of Traditional Chinese Medicine*, 2011, 43(3): 5-6.

[13] Anonymous. Lingshu Jing [M]. Beijing: People's Medical Publishing House, 2012.

[14] Anonymous. Huangdi Neijing [M]. Beijing: People's Medical Publishing House, 2012.

[15] Jiang XC, Wang GB, Liu FD, et al. Study on the name and substance of the spleen based on "image thinking" [J]. *World Chinese Medicine*, 2024, 19(7): 994-999.

[16] Yang SS. Huangdi Neijing Taisu [M]. Beijing: People's Medical Publishing House, 1965.

[17] Yao ZA. Suwen Jingzhu Jiejie [M]. Beijing: People's Medical Publishing House, 1963.

[18] Yu P, Wang T. Study on the treatment rules of emotional disorders in Mingyi Lei'an based on the theory of "spleen-earth in the centre irrigating the four sides" [J]. *World Chinese Medicine*, 2021, 16(16): 2450-2454.

[19] Liu Y, Zhao Y, Wang Y, et al. Strategic discussion on the theoretical system of spleen visceral manifestation in the new era of traditional Chinese medicine [J]. *Journal of Practical Traditional Chinese Internal Medicine*, 2024, 38(10): 1-3.

[20] Guan Zhong. Guanzi [M]. Beijing: Beijing Yanshan Press, 1995.

[21] Chen L. Baihu Tong Shuzheng [M]. Beijing: Zhonghua Book Company, 1965: 168.

[22] Liu X, Liu LL, Wu Y. Research progress on the correlation between spleen visceral manifestation and intestinal flora in traditional Chinese medicine [J]. *Chinese Journal of Surgery of Integrated Traditional and Western Medicine*, 2024, 30(6): 933-937.

[23] Shi XM. Acupuncture and Moxibustion [M]. Beijing: China Press of Traditional Chinese Medicine, 2002: 10-20.

[24] Li QX, Nie HK, Wang ZQ, Tang XH. Professor Tang Xiaohu's experience in treating Sjögren's syndrome based on the theory of "liver and kidney sharing the same origin" [J]. *Rheumatology and Arthritis*, 2022, 11(3): 41-43, 72.

[25] Sebastian A, Madej M, Sebastian M, et al. Prevalence and clinical presentation of lymphoproliferative disorder in patients with primary Sjögren's syndrome [J]. *Rheumatology International*, 2020, 40(3): 399.

[26] Bernacchi E, Bianchi B, Amato L, et al. Xerosis in primary Sjögren syndrome: immunohistochemical and functional investigations [J]. *Journal of Dermatological Science*, 2005, 39(1): 53.

[27] Lindvall B, Bengtsson A, Ernerudh J, et al. Subclinical myositis is common in primary Sjögren's syndrome and is not related to muscle pain [J]. *Journal of Rheumatology*, 2002, 29(4): 717.

[28] Lavoy EC, McFarlin BK, Simpson RJ. Immune responses to exercising in a cold environment [J]. *Wilderness & Environmental Medicine*, 2011, 22(4): 343.

[29] Bai YJ, Jiang DX, An N, et al. Effects of cold-damp and hot-damp environments on VEGF and IL-1 expression in joint cartilage cells in adjuvant arthritis in rats [J]. *Journal of Traditional Chinese Medicine*, 2012, 32(2): 256.

[30] Spies CM, Cutolo M, Straub RH, et al. More night than day—circadian rhythms in polymyalgia rheumatica and ankylosing spondylitis [J]. *Journal of Rheumatology*, 2010, 37(5): 894-899.

[31] Chen MF, Li ZZ, Wu Y. Analysis of medication timing for rheumatic diseases based on the theory of "dawn relief, daytime stability, evening exacerbation, and night severity" [J]. *Journal of Shandong University of Traditional Chinese Medicine*, 2022, 46(3): 299-303.