

Literature Visual Analysis of the Theoretical Research of "Yin Fire Theory" Based on Citespace

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Abstract: Objective Based on Citespace software, to visually analyze the literature related to yin fire theory. Methods Citespace 6.1R3 software was used to carry out data visualization analysis on the research institutions, authors and keywords of the literature on the theory of yin and fire published from the establishment of the database to November 2022. Results 532 Chinese literatures were included, and the overall annual volume of papers was on the rise. The main institutions and authors were obtained through visual analysis. The results of key words showed that the main research direction and trend was clinical experience. Conclusion. This study directly shows the research status in this field, shows the research institutions and authors, analyzes the research hotspots and trends, and points out the direction for the further development of the theory of "Yin Fire" in the future.

Keywords: Yin fire theory; Citespace; Visual analysis; Knowledge map; Bibliometrics

The theory of Yin fire was originally created by Mr. Dong yuan on the basis of the Yellow Emperor's Internal Classic. It is an important part of his academic thought, and there is still considerable controversy about its specific connotation. In the "Theory of the Spleen and the Stomach", Li discussed the yin fire in detail. He believed that "both the spleen and the stomach qi are weak, the vitality is insufficient, and the heart fire is only strong. The heart fire, the yin fire, also starts from the lower energizer, and it is from the heart. The heart does not dictate, but the phase fire replaces it. The phase fire, the fire of the lower energizer cell collateral, and the thief of the vitality are also. The fire and the vitality are not incompatible." He proposed the treatment method of ascending yang and purging fire ^[1]. For the concept of yin fire, Li Dong yuan did not exactly explain it in the theory of spleen and stomach, sometimes referring to heart fire, sometimes referring to kidney fire, sometimes referring to the fire of the five viscera, the fire of the meridians, the fire of the five chi, the fire of the phase, the fire of the lower jiao envelope, etc. ^[2]. Later doctors have different views on this, but it can be found that the theory of yin fire plays an important role in the etiology and pathogenesis of various visceral diseases, and the major treatment methods based on the theory of yin fire are invigorating the spleen and stomach, purging yin fire, and ascending yang ^[3]. Although there are more and more studies on the theory of yin fire this year, there are few visual analysis of the literature on the theory of yin fire.

Citespace is a visual document metrological analysis tool. This study uses Citespace 6.1R3 software to draw a visual knowledge map of the literature related to the theory of yin fire in the CNKI database, and analyzes its research status, research hotspots and trends, so as to provide a certain basis for further promoting the development and improvement of the theory of yin fire.

1. Data and methods

1.1 Data source

This study takes CNKI as the data source, and the search conditions are: subject="Yin Fire Theory" or title="Yin Fire Theory"; Search time: from the establishment of the database to November 4, 2022.

1.2 Data processing

After manual screening, the documents of conferences, doctoral papers and scientific and

technological achievements were excluded, and 523 documents remained after the duplication was removed; Export the document in "Refworks" format and name it download_***.txt.

1.3 Research methods

The literature is imported into Citespace 6.1R3 software for transformation, and the time period is set from 1962 to 2022. The visual analysis of authors, institutions and keywords is carried out by taking one year as the cutting point.

2. Results

2.1 Analysis of annual document volume

From 1962 to 2022, the number of documents related to "Yin fire Theory" was 532, and the annual number of documents was on the rise. (See Figure 1)

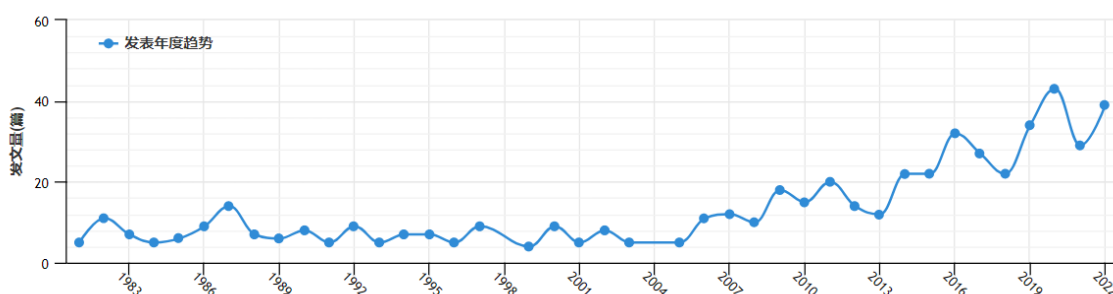


Figure 1: Trends in the number of documents issued by CNKI from 1962 to 2022

2.2 Co-occurrence analysis of authors

According to the author's co-occurrence atlas, it can be found that Wan You sheng, Qiu Yu ping, Zhu Zeng bo, Yan Ran and others have a large number of papers, which are 5, 4, 4 and 4 respectively. In general, the number of papers published in this field is generally low. See Table 1.

Table 1: Top 10 authors in the number of publications

Author's	number of publications	Author's	number of publications
WAN YOU SHENG	5	Li yan	3
QIU YU PING	4	Wu shen tao	3
ZHU CENG BAI	4	Zhang xing ping	3
YAN RAN	4	Guo wei xing	3
YU REN HUAN	3	Liu zhong yong	3



Figure 2: The author's co-occurrence map

According to the analysis of the cooperation network of the authors of the study on the theory of yin and fire (Figure 2), it was found that Wan You sheng and Wan Lan qing, who had a large number of papers, formed a team, mainly involving the study of yin and fire and the removal of heat by sweet and warm. Qiu Yu ping's team mainly studied yin and fire; After 2010, many scholars began to study yin fire and disease. For example, Yan Ran's team began to discuss the relationship between yin fire and tumor, Liu Zhong yong's team conducted a study on yin fire and coronary heart disease, and Wu Shen tao's team studied the relationship between yin fire and diabetes vascular disease. In general, the scale of team cooperation is relatively small, and there is little cooperation between teams.

2.3 Institutional co-occurrence analysis

According to the mechanism visualization analysis conducted by Citespace software (N=406, E=185, Density=0.002, (Q, S)=0.971), the importance of the document is measured. The larger the nodes of the co-occurrence map, the more documents are issued, the thicker the connection between the nodes indicates the closer the relationship, as shown in Figure 3. The five institutions with the largest number of papers are Shandong University of Traditional Chinese Medicine, Tianjin University of Traditional Chinese Medicine, Beijing University of Traditional Chinese Medicine. Affiliated Hospital of Chengdu University of Traditional Chinese Medicine and Chengdu University of Traditional Chinese Medicine. See Table 2 for the specific results. It can be concluded from the atlas that there is little cooperation between institutions, and Tianjin University of Traditional Chinese Medicine, Gansu University of Traditional Chinese Medicine and Chengdu University of Traditional Chinese Medicine have cooperation in this field, mostly in universities and affiliated hospitals.

Table 2: Top 10 institutions with the number of documents issued

institution	number of publications	institution	number of publications
Shandong University of Traditional Chinese Medicine	19	Jiangxi University of Traditional Chinese Medicine	8
Tianjin University of Traditional Chinese Medicine	11	Guang'anmen Hospital, Chinese Academy of Chinese Medical Sciences	8
Beijing University of Traditional Chinese Medicine	11	Guangzhou University of Traditional Chinese Medicine	8
Affiliated Hospital of Chengdu University of Traditional Chinese Medicine	11	The First Affiliated Hospital of Tianjin University of Traditional Chinese Medicine	7
Chengdu University of Traditional Chinese Medicine	10	Nanjing University of Traditional Chinese Medicine	6

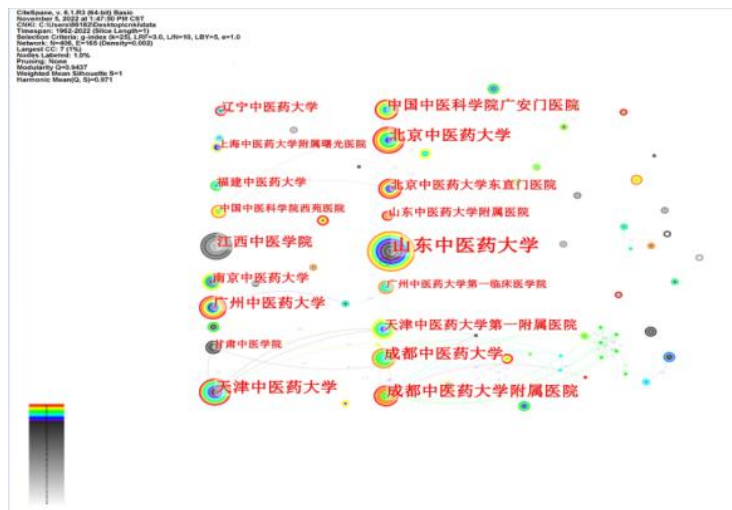


Figure 3: Organization co-occurrence map

2.4 Keyword co-occurrence analysis

Through the co-occurrence analysis of keywords by Citespace software, 476 keywords were

obtained, and the top 10 keywords were listed according to frequency and centrality, as shown in Table 3.

Table 3: Top 10 keywords

RANKING	KEYWORD	FREQUENCY	CENTRALITY
1	Yin fire	225	0.54
2	LIDONGYUAN	152	0.37
3	Yin fire theory	40	0.29
4	Yin fire theory	39	0.28
5	Ganwen deheating	35	0.33
6	Treatise on the spleen and stomach	31	0.07
7	Phase fire	25	0.33
8	Li gao	22	0.19
9	interpretation of the cause	17	0.16
10	diabetes	13	0.2

2.5 Keyword Emergence Analysis

Keyword emergence analysis refers to the frequency of a keyword occurrence in a certain period to understand the hot spots of concern in that period. The emergence analysis takes begin as the start time, end as the end time, and strength represents the intensity of keyword emergence. The greater the value, the greater the intensity, and the greater the influence. See Figure 4. From the figure, we can clearly see that from 1962 to 2022, there were a total of 13 emergent times, among which Gan wen Qure, Yi qi Decoction, Yin Fire Syndrome, and Qi Deficiency Fever appeared the earliest. In the past decade, Yin Fire Theory, TCM Theory, Yin Fire Theory, and clinical experience have become the main emergent words. Especially in the past two years, the mutation intensity of Yin fire theory and clinical experience is the strongest.

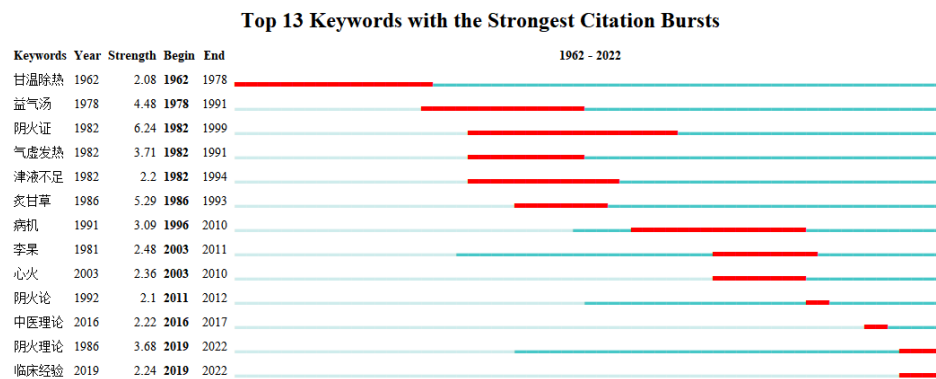


Figure 4: Keyword Emergence

2.6 Keyword cluster analysis

Cluster analysis is a process of classifying data into different classes or clusters according to the principle of "birds of a feather flock together", so that objects in the same cluster have great similarities, while objects in different clusters have great differences, and then identify areas of interest for people, cluster key words, and get the cluster map, as shown in Figure 5. The clustering result shows that the clustering module value $Q=0.8252$ ($Q>0.5$), and the average contour value $S=0.9599$, which indicates that the clustering result is reliable and effective. This study has 15 categories, and 7 of the larger ones are selected for display, which are (# 0) yin fire, (# 1) treatment, (# 2) yin fire theory, (# 3) Li Dong yuan, (# 4) yin fire theory, (# 5) phase fire, (# 6) roasted licorice, and (# 7) sweet heat removal. Keyword clustering is used for timeline analysis, as shown in Figure 6. It can be found that in the past two years, there have been more studies on (# 0) Yin Fire, (# 2) Yin Fire Theory, (# 4) Yin Fire Theory,

and (# 5) Phase Fire, indicating that the study of Yin Fire Theory mainly focuses on the above fields.

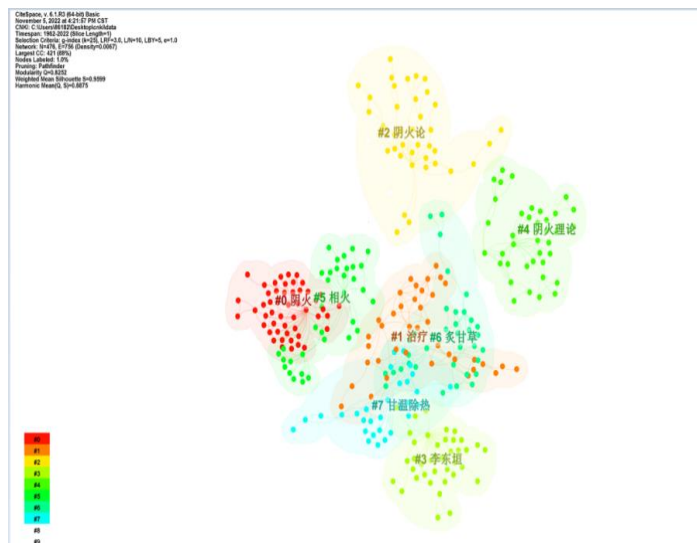


Figure 5: Keyword cluster map

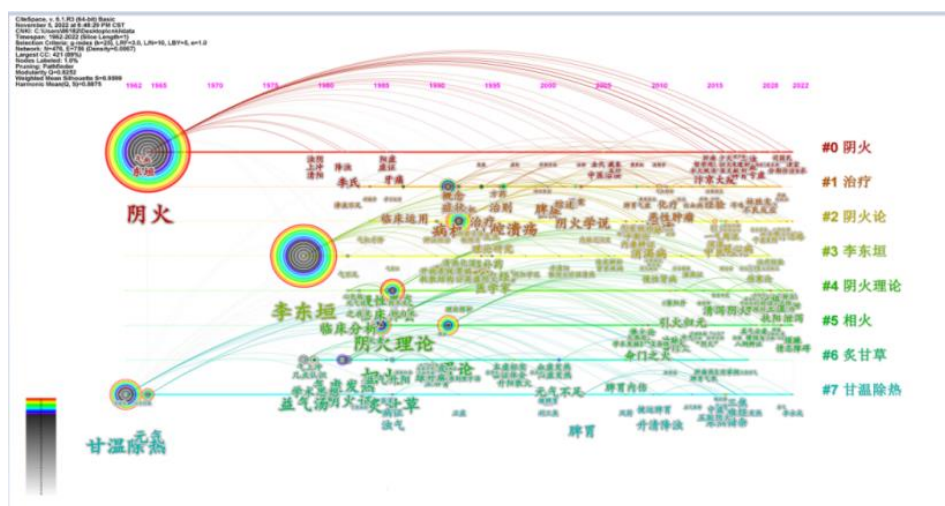


Figure 6: Keyword clustering timeline map

3. Discussion

3.1 Research status

Through the retrieval of 532 documents related to the "Yin fire Theory" in CNKI, it was found that the number of documents published has increased in general, indicating that the attention to this field has been increasing. Among them, the main core authors are Wan You sheng, Qiu Yu ping, Zhu Zeng bo, etc. There are relatively stable cooperation teams among different authors, and the research content of each team is different. For example, Yan Ran, Feng Xiang rong, Liu Zhong yong, Huang Qi and other [4,5,6,7] teams studied the relationship between yin fire and tumor, the relationship between yin fire and coronary heart disease, and Wu Shen tao's team and Li Bu man [8,9] studied the relationship between yin fire and diabetes vascular disease. Yu Ren huan [10, 11] and others explored the mechanism of chronic kidney disease based on the theory of yin and fire.

3.2 Research hotspots and trends

Key words are the response to the core content of the article. According to the analysis of key words, hot issues in this field can be found. Hot key words include yin fire, Li Dong yuan, yin fire theory, sweet warmth to remove heat, spleen and stomach theory, diabetes, etc. Diabetes belongs to the category of "diabetes" in traditional Chinese medicine, and its main symptoms are polydipsia, polyuria,

fatigue, emaciation or sweet urine ^[12]. Professor Liu Yan chi respected the past and created the present. He believed that the root of diabetes was fire and heat, and yin was injured by heat. The treatment should take nourishing yin and clearing heat as the general principle. He created the basic formula of diabetes and achieved satisfactory results ^[13]. Fan Rong et al. ^[14] summarized Professor Ma Guo qing's experience in the treatment of diabetes, and believed that the basic pathogenesis of diabetes is spleen deficiency and dampness. The basic treatment method is to strengthen the spleen and remove dampness. It can also be properly combined with the products of nourishing yin, clearing heat, promoting blood circulation and removing blood stasis. The clinical effect is remarkable, providing reference for the treatment of diabetes in traditional Chinese medicine.

In recent years, the summary of sweet temperature and heat removal has become the research focus and frontier of "Yin Fire Theory", Such as Lin Jie et al "The method is an effective method to treat the internal injury fever syndrome or the external fever caused by the deficiency of qi and blood^[15]. It is frequently used in the long-term refractory internal injury fever. However, for the cases with low fever for a short time, as long as the syndrome type is consistent, it can still be considered. The disease is a dynamic development process, and the treatment based on syndrome differentiation should start from the whole. The peritoneal dialysis patients themselves. There is a lack of vital energy. When treating such patients, we should not only grasp the symptoms of the patients, but also ignore the symptoms of the patients. Only when the two are fully combined with syndrome differentiation and seeking the root of the disease, can we hit the pathogenesis, and the effect is as good as a drum. This article introduces a case of short-term low fever in peritoneal dialysis patients treated with "sweet and warm antipyretic" method for reference. Jiang Yu kun et al^[16]. The method of removing heat with sweetness and warmth was initiated by Li Dong yuan. It is a therapeutic principle for treating internal injury and fever with drugs with sweetness and warmth. Through sorting out the cause of the former and analyzing the theory of the latter, it is believed that the method of sweet and warm tonifying plays a certain role in the treatment of clinical asthenic heat and pulmonary flaccidity.

The theory of sweet warming and heat removal is an important part of Li Dong yuan's academic thought, which is used to treat internal injury and fever caused by qi deficiency. Among them, the weakness of spleen and stomach and the upwelling of yin fire are the key pathogenesis of qi deficiency and fever. The prescription of Bu zhong Yi qi Decoction is the representative prescription of sweet warming and heat removal method, which can comprehensively regulate the immune function of the body. Li Dong yuan pioneered the theory of yin and fire, which can eliminate yin and fire by replenishing the middle energizer, raising the yang and restoring the qi. The great method of eliminating heat with sweet and warm is actually a counter-treatment method to treat the syndrome of true cold and holiday heat. It should belong to the category of "heat due to heat" in traditional Chinese medicine, and it will open a new way for later generations to treat internal injury and fever. The treatment of advanced cancer fever ^[17], postoperative fever ^[18], blood disease ^[19] and immune disease fever ^[20] and other non-infectious and unexplained fever can significantly shorten the time for patients to reduce fever and achieve good results, which not only reflects the flexibility of TCM in treating different diseases with the same treatment and syndrome differentiation, but also has important significance in guiding clinical practice. Ye Zhao di ^[6] discussed the relationship between coronary heart disease and yin fire based on Li Dong yuan's theory of yin fire. He believed that qi deficiency runs through the development of coronary heart disease, and heat is the key factor for the instability of atherosclerotic plaque. In the process of eliminating phlegm and removing blood stasis, drugs that are sweet, warm and replenishing qi can be used to supplement the middle qi and regulate the rise and fall of qi, which can improve the efficacy.

Yang Yi tong et al. ^[21] Metrorrhagia is a common gynecological clinical disease, which is mainly manifested by irregular bursts of menstrual blood or unclean dripping, and belongs to heat syndrome and deficiency syndrome. The formation of yin fire is mainly due to the weakness of the spleen and stomach, the insufficiency of vital energy, and the hyperactivity of asthenic heat. Its occurrence has the same theoretical basis as metrorrhagia and metrorrhagia. The two are physically related and pathologically affected each other. The patients with heat syndrome metrorrhagia have the pathological characteristics of multiple qi deficiency, multiple damp-heat, and multiple stasis. Therefore, according to the theory of yin and fire, clearing pathogenic heat, reinforcing spleen and kidney, and regulating qi are effective methods for treating heat syndrome metrorrhagia.

The theory of "Yin fire" was put forward by Li Dong yuan. Yin fire has the difference between "heart fire" and "kidney fire". In essence, it is phase fire. Its origin is caused by the weakness of the spleen and stomach. Its pathogenesis includes the loss of vital energy by Yin fire, the imbalance of ascending and descending caused by Yin fire, and the generation of internal heat by Yin fire. Yin fire is

closely related to emotional diseases. The hyperactivity of yin fire affects the mind, and the disorder of ascending and descending causes the mind to be upset, which is caused by heat. The stagnation of seven emotions can also cause the hyperactivity of yin fire. It is an important method to treat emotional disorders from yin and fire by tonifying the spleen and stomach, discharging yin and fire, increasing yang, removing heat, generating blood and reducing adverse reactions. The pathogenic factors of modern "yin fire" are obviously increasing. It is a reasonable way to treat emotional disorders, especially irritability and other positive diseases from the perspective of "yin fire", which is worthy of in-depth discussion [22].

Li Dong yuan's "Yin Fire Theory" started from the article "Yin Deficiency Generates Internal Heat" in the Huang di Internal Classic. The deficiency of spleen and stomach is the fundamental origin of Yin Fire, the delusion of phase fire is its essence, and the imbalance of ascending and descending is its core pathogenesis. As one of the common arrhythmia in clinic, ventricular premature contraction is closely related to the pathogenesis and treatment of "yin fire theory". The combination of prescription and syndrome has been confirmed by using the representative prescription of yin fire theory, Bu zhong Yi qi Decoction and Zhu sha Anshen Pill, to treat ventricular premature contraction [23]. Therefore, the differentiation and treatment of ventricular premature contraction from the perspective of "yin fire" provides a new idea for the treatment of this disease, and has certain clinical guiding significance.

4. Problems and prospects

Based on the bibliometric software citespace, this study visually analyzed the relevant literature of "yin fire theory", learned about the main research institutions, key words, and authors, and found that the most published institutions are Shandong University of Traditional Chinese Medicine, Tianjin University of Traditional Chinese Medicine, and Beijing University of Traditional Chinese Medicine. Yin fire theory, Li Dong yuan, yin fire theory, phase fire, sweet and warm heat removal, and clinical experience are the main research fields. It provides a certain basis for the research frontier and development trend of the theory of yin and fire. At the same time, we can draw a conclusion that the theory of yin and fire is mainly based on the continuous development of the theory of visceral signs and the theory of yin and yang and the five elements, which defines the future research direction. However, this study also has some shortcomings, which mainly includes the CNKI literature, not the foreign literature, resulting in a certain bias in the results.

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