

Research on Countermeasures of Innovation and Development of Traditional Chinese Medicine Supported by Science and Technology—Taking Dazhou, China as an Example

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Abstract: Dazhou city is located in the hinterland of Daba Mountain in the northeast part of Sichuan Basin, which is connected with Shanxi and Chongqing. It has a wide variety of traditional Chinese medicine resources, is rich in resources, and has great potential for production and development. It is known as the "Pharmaceutical storehouse of Eastern Sichuan", with more than 2,380 kinds of medicine resources, which has a good development prospect. In order to give full play to the support of scientific and technological innovation and lead the development of traditional Chinese medicine, this paper summarizes and analyzes the development status and scientific and technological support of Traditional Chinese medicine in Dazhou city, and puts forward the ideas and suggestions for the next step on the main problems existing at the present stage.

Keywords: Traditional Chinese Medicine; Innovative Development; Countermeasures; Dazhou

1. Development status

1.1 The first industry

In terms of the production of Chinese medicinal materials, there are 250 operating entities engaged in the planting or breeding of Chinese medicinal materials in the city, including 43 animal breeding medicinal materials enterprises, and there are 88 varieties planted, covering an area of 500 square kilometers. The output value of the first industry of the Chinese medicinal industry chain is about 3.53 billion yuan, of which animal medicinal materials is about 20 million yuan.

1.2 The second industry

In terms of production and sales, there are 7 traditional Chinese medicine industry enterprises in Dazhou to obtain Good Manufacturing Practices (GMP), mainly located in Tongchuan District, mainly distributed in Tongchuan district, through processing to form capsules, oral liquid and other drugs.

1.3 The third industry

In terms of medical services, there are 4239 medical service institutions in Dazhou, including 109 hospitals, 4145 primary medical and health institutions, 27 professional public health institutions and 3 other medical and health institutions. Dazhou has 1 drug inspection and testing institutions, 5 scientific research and education institutions.

2. Technology support

2.1 Strengthen project support

In the "Dazhou Science and Technology Plan Project Application Guide" and "Dazhou Science and Technology Achievements Transformation and Municipal-School Cooperation Special Project", a special project on traditional Chinese medicine is set up to support scientific research institutes of colleges and universities to carry out key technical researches and achievements transformation around traditional Chinese medicine. In the past three years, a total of 18 projects have been supported, and 3.33 million yuan of funds have been released. Strive for 4 scientific and technological plan projects in the field of traditional Chinese medicine, and strive for funds of 4.3 million yuan. The implementation of the municipal project "Food and Medicine Materials Volume Dan Lily Science and Technology Poverty Alleviation Industry Project" has promoted the promotion of new varieties and new technologies of lilies, improved the conversion rate of agricultural scientific and technological achievements, driven the accurate identification of poor people to increase their income by 6247 yuan, and improved the scientific and technological level of farmers.

2.2 Enhanced platform support

The first is the establishment of Dazhou Traditional Chinese Materia Medica Industry Technology Research Institute. Through the Industrial Technology Research Institute, it has established business contacts with related enterprises, Sichuan College of Arts and Sciences, Dazhou Vocational and Technical College, Dazhou Vocational College of Traditional Chinese Medicine, Municipal Drug Inspection Institute, etc., cooperated in declaring 5 projects, and carried out work cooperation more than 10 times. The second is the upcoming construction of a regional traditional Chinese medicine preparation center. After the completion of the center, the existing varieties of traditional Chinese medicine preparations in the area of eastern Sichuan (Dazhou, Nanchong, Guang'an, Bazhong) will be retained; Will increase the sales volume of preparations in medical institutions; It will carry out clinical medical research, drug development and clinical pharmacy, etc., and create a platform for the cultivation of professional pharmacy talents and share resources.

2.3 Strengthen talent support

The first is to set up a modern agricultural "9+3" industrial science and technology commissioner Chinese herbal medicine team to conduct decision-making consultation, technical guidance and new variety development of Chinese medicinal materials such as Huangjing, Lily and Huanglian in our city. In 2021, a special project for the innovation project of science and technology commissioners will be set up in the municipal science and technology plan project, and the "Research and Demonstration of Cultivation of Chinese Medicinal Materials in Dazhou City" declared by the Chinese herbal medicine team will be approved, and the fund will be 200,000 yuan. The second is to establish the Dazhou Traditional Chinese Medicine Association, carry out academic seminars on traditional Chinese medicine, and promote the high-quality development of the traditional Chinese medicine industry in our city.

3. Problems

3.1 Lack of basic research

Our city is rich in traditional Chinese medicinal resources, there are 1656 kinds of medicinal plants alone, accounting for 14.86% of the country, but there are only more than 170 varieties that can form commodities, and 88 kinds are now cultivated, and only 14 varieties of varieties planted more than 5000 acres are planted. Due to the lack of basic research, planting has a certain degree of blindness and dispersion, and it is impossible to adapt to local conditions and screen out excellent varieties suitable for the terrain and terrain of Dazhou.

3.2 Weak intensive processing

Most of the wild and home-grown medicinal materials, such as Shouwu, Knotweed, Mulberry White Peel, are sold at low prices to The Chinese herbal medicine trading markets such as Bozhou in Anhui and Lotus Pond in Chengdu after simple drying, or are directly purchased by foreign pharmaceutical companies at low prices, and the added value of the products is low. On the other hand, due to the low quality of basic medicinal materials, the lack of evaluation standards and testing systems, 90% of the raw materials of Chinese herbal medicines in the city's traditional Chinese medicine manufacturing enterprises come from other places, and there is a phenomenon of "local medicinal materials exported, local enterprises purchasing", and the profit outflow is serious.

3.3 Lack of scientific and technological talents

First, there is a shortage of Chinese medicine management talents. Some scientific and technological staff wear several positions, do not have a deep understanding of the professional development of traditional Chinese medicine, and their decision-making and consulting ability is not strong. Second, there is a scarcity of technical talents in enterprises. The theoretical level of technical personnel from planting, processing, extraction and testing is not enough, and the ability to innovate is insufficient. Third, there is a shortage of high-end talents in basic research such as resource evaluation, active ingredient extraction, and efficacy research, which cannot point out the direction for the development of Authentic Medicinal Materials in Dazhou.

4. Suggestions

4.1 Strengthen basic research

Support universities, scientific research institutes, and enterprises with R&D capabilities to cultivate advantageous varieties of authentic medicinal materials in Dazhou, adopt various models such as "company+base+professional cooperative+farmer", actively carry out the construction of standardized planting bases for Chinese herbal medicines, and provide raw materials for the processing of traditional Chinese medicines^[1].

4.2 Strengthen cooperation between hospitals and local communities

Strengthen the cooperation between research institutes, hospitals, colleges and local traditional Chinese medicine enterprises, provide technical support for the cultivation of Chinese herbal medicines, pest control, and pathological analysis, provide guarantees for the research and development of new drugs and the industrialization of excellent formulas, provide internship and exercise places for the cultivation of talents in colleges and universities, and ultimately promote integrated development.

4.3 Focus on talent training and introduction

First, strengthen the business training of management personnel. Provide more learning and exchange platforms for scientific research management talents, and point out the development direction for Chinese medicine researchers. The second is to formulate a talent training plan for the Traditional Chinese medicine industry, improve the construction of traditional Chinese medicine majors in local colleges and universities in Dazhou, and pay attention to the joint training of new practical talents. At the same time, a series of preferential policies for high-level talents will be formulated to attract and retain talents, and high-end talents will be encouraged to start businesses in Dazhou or participate in or host scientific research activities in a flexible way^[2].

4.4 Provide policy support

The first is to introduce a series of preferential policies. Combined with local realities, we will introduce practical preferential policies such as fiscal, taxation, finance, and talent welfare to promote the development of the traditional Chinese medicine industry^[3]. By reducing taxes, smoothing financing channels, and improving talent welfare benefits, enterprises are encouraged to produce new products, optimize production processes, encourage hospitals to develop formula preparations, and introduce research talents to carry out scientific research. The second is to establish a reward and responsibility mechanism. Establish a leading group for the development of traditional Chinese medicine, issue specific tasks for the development of traditional Chinese medicine to the management departments of the Administration of Traditional Chinese Medicine, the Health Commission, the Science and Technology Bureau, and establish a long-term responsibility mechanism. Reward and incentivize departments, enterprises, and large planters that have made significant achievements.

References

- [1] Mo RY, Peng R. Problems and Countermeasures of Traditional Chinese Medicine Agricultural Development of Chongqing[J]. Medicinal Plant, 2013(10).
- [2] Zhang XX, Sun L, Feng X, Zhao GZ, Guo YB, Yang HJ, Huang LQ. [Current status, problems and countermeasures of construction of standardization system of traditional Chinese medicine]. Zhongguo Zhong Yao Za Zhi. 2019 Nov;44(21):4745 -4750.
- [3] Wang X, Hu X, Liu C. Problems and Countermeasures for the Data Mining of Medical Records of Traditional Chinese Medicine in the Era of Big Data[J]. Journal of Physics: Conference Series, 2021, 1881(3):032-042.