

Discussion on Training Mode for Applied Talents Based on Traditional Chinese Medicine Identification

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Keywords: Traditional Chinese medicine identification; Applied talents; Training mode

Abstract. Traditional Chinese medicine identification is an applied discipline to identify and study the varieties and quality of traditional Chinese medicine, formulate quality standards for traditional Chinese medicine, and seek and expand new drug sources. Also, it is one of the important courses for the specialty of traditional Chinese medicine. Based on the training mode for applied talents in traditional Chinese medicine identification, this work discussed the ways and methods of training applied talents from four aspects: course teaching, experiment teaching, practice of medicinal botanical garden, exploration and improvement. Then, students can gradually improve the ability of traditional Chinese medicine identification, master the basic theory, technical methods and experimental skills of traditional Chinese medicine identification. High quality modern applied talents of traditional Chinese medicine are trained to inherit and carry forward the pharmaceutical heritage of the motherland, and enrich and promote the development of modern Chinese medicine science.

1. Introduction

At the national conference on Chinese medicine on October 25, 2019, Chinese President Xi Jinping stressed the need to follow the development of traditional Chinese medicine, inherit the essence, innovate and accelerate the modernization and industrialization of traditional Chinese medicine. He also stressed that we should attach equal importance to traditional Chinese and western medicine, promote the complementary and coordinated development of traditional Chinese medicine and western medicine, promote the development of high-quality Chinese medicine undertakings and industries, and promote traditional Chinese medicine to the world. The unique advantages and functions of traditional Chinese medicine in disease prevention and treatment should be brought into full play to contribute to building a healthy China and realizing the Chinese dream on great rejuvenation of the Chinese nation. In advancing the process of building healthy China, it is necessary to adhere to the guidance of Xi Jinping's new socialist ideology with Chinese characteristics, and thoroughly implement the decision-making and deployment from the Party Central Committee and the State Council. The cultivation of traditional Chinese medicine talents, scientific and technological innovation, and drug research and development should be vigorously promoted, and the unique advantages of traditional Chinese medicine in disease prevention, treatment and rehabilitation should be fully exerted [1].

Due to the artemisinin application in the treatment, the mortality of malaria patients has been significantly reduced, saving millions of lives in the world, especially in developing countries. Tu Youyou, a Chinese pharmacist, won the Nobel Prize in physiology or medicine in 2015. Traditional Chinese medicine has come to the world stage and gradually been recognized by the world. At the same time, the Party and the state attach great importance to the development of traditional Chinese medicine. Traditional Chinese medicine has ushered in new opportunities and challenges, and put forward new requirements for Chinese medicine talents.

Traditional Chinese medicine, including traditional Chinese medicine, decoction pieces and Chinese patent medicine, is the material basis for the prevention and treatment of diseases. However, the authenticity and merits of traditional Chinese medicine identification determines the safety and effectiveness of clinical medication. Based on the inheritance of traditional identification experience,

traditional Chinese medicine identification is a discipline with strong theoretical and practical nature. It studies and discusses the theoretical and practical problems of the origin, variety identification, quality evaluation, development and expansion of new drug sources on traditional Chinese medicine by using modern natural science, especially the theories, technologies and methods of botany and chemistry [2]. Artemisinin extracted from the aboveground part of *Artemisia annua* is the active ingredient of anti-malarial. However, the dried aboveground part of *Artemisia annua* can only be used for the treatment of acute cholecystitis and cholecystitis, and has no anti malaria effect. Therefore, the variety identification and quality identification of traditional Chinese medicine is particularly important, which directly affects the accuracy and effectiveness of the clinical medication. In order to meet the needs of traditional Chinese medicine development to identify talents, promote the industrialization of traditional Chinese medicine and accelerate the process to the world, it is urgent to cultivate high-quality applied talents in traditional Chinese medicine identification, which is of great practical significance.

2. Teaching in Accordance with Their Aptitude

Qiqihar medical university was established by the Heilongjiang province education department in 2011 as the construction unit of characteristic applied undergraduate university. Since the establishment of the project, the unit adheres to the scientific concept of development as the guide, adheres to the school running concept of "the best university, the sincere doctors, the advocacy of academic, the pursuit of excellence", follows the law of medical education and implements the international standards of medical education. Combined with the needs for professional talents, they reform and restructure the curriculum structure, focus on the innovation of talent training mode, strive to improve the quality of talent training, and establish the applied talents training mode with characteristics in local medical colleges [3].

2.1. Focusing on cultivating students' interest

The research object of traditional Chinese medicine identification is traditional Chinese medicine. So far, the number of traditional Chinese medicine has been nearly 13000. There are many varieties and complicated sources, among which about 500 kinds of traditional Chinese medicine are commonly used. Traditional Chinese medicine identification covers the source, origin, collection and processing, character identification, microscopic identification, chemical composition, physical and chemical identification of traditional Chinese medicine. The courses of medicinal botany, traditional Chinese medicine, traditional Chinese medicine chemistry, traditional Chinese medicine processing, etc., are integrated. It focuses on the concept and knowledge points of memory and has strong theoretical nature. In the traditional face-to-face teaching process, students' enthusiasm for learning is not high and boring, and it is easy to produce the mentality of learning weariness to the course and to leave the rhythm of the classroom.

Before the formal teaching, the hospital led the Chinese medicine students to visit the precious specimens of animals and plants displayed in the traditional Chinese medicine herbarium, and explained the making process and significance of the specimens as well as the distribution of authentic medicinal materials in China. Among them, the most representative specimen of *Euphorbia fischeriana* is described from the aspects of medicinal value, medicinal parts, efficacy and clinical application, etc. This offers a good opportunity for students majoring in traditional Chinese medicine to directly contact and understand traditional Chinese medicine, and deepen their understanding for traditional Chinese medicine. Students visit medicinal botanical gardens and campus medicinal plants, get close to and experience the morphological structure of medicinal plants, and learn about the roots, stems, leaves, flowers, fruits and seeds of medicinal plants. They can be guided to have a strong interest in traditional Chinese medicine, and can be encouraged to study professional knowledge and master corresponding skills.

2.2. Paying attention to the mastery of professional basic theories, knowledge and skills

Based on students' mastery of certain cultural knowledge, professional basic course is to expand relevant knowledge to depth according to professional needs, thus offering theoretical and technical preparation for learning professional courses and engaging in professional work. From the nature of

professional basic courses, professional basic courses are mostly theoretical, conceptual and analytical. Through the investigation of enterprise's demand for talents, it is shown that enterprises are eager for professionals with solid professional foundation, strong practical ability and innovative thinking. A solid professional foundation is the premise of practical ability and innovation ability [4]. Great oaks from little acorns grow. Mastering the basic knowledge is the premise of understanding and learning the professional courses in the future. At the same time, it is also a good preparation for the basic knowledge of practical skills.

Medicinal botany, which is closely connected with traditional Chinese medicine identification, is a basic course with strong theoretical, practical and intuitive features. It includes the morphology and internal structure of plants and the classification of plants, and learns the morphology and microscopic characteristics of plant cells, tissues and organs. Teaching aids such as plant specimens, models, charts, microsections, etc., are used to analyze and solve problems. Traditional Chinese medicine is divided into plant medicine, animal medicine and mineral medicine, of which plant medicine is the most. Through learning medicinal botany, it lays a solid foundation for systematic learning of traditional Chinese medicine identification from plant cell tissue organ and from fern gymnosperms angiosperms. Also, it plays a multiplier effect for quickly understanding and mastering corresponding professional terms, such as "chrysanthemum heart", "wheel pattern", etc.

2.3. Focusing on cultivating innovative thinking and spirit

With the application of new technology, the means and methods of traditional Chinese medicine identification have entered a new stage. Fundamental identification, character identification, microscopic identification, physical and chemical identification, and biological identification are independent of each other, which involves the use of many instruments and equipment. For example, transmission electron microscope, scanning electron microscope, the combination of the scanning electron microscope and X-ray energy spectrum analysis, etc., all have a new development. Ultraviolet spectrophotometer, infrared spectrophotometer or atomic absorption spectrophotometer, etc., are used for qualitative and quantitative analysis. It is a necessary professional skill required by drug inspection institute, pharmaceutical company, hospital traditional Chinese medicine room and other units for college students who are going to work in the future to study traditional Chinese medicine identification, master various new identification methods and innovate in the use of various technical means to detect the tested drugs.

In order to cultivate the students' innovative thinking and design ability, the pharmaceutical innovative design experiment course is established, which is composed of 3 design experiment courses and 1 comprehensive design experiment course. Based on the existing conditions of the laboratory, the discipline design experiment is to design and complete the experiment. In the basic process of new drug research and development, the classic drug aspirin is selected as the experimental object. Students design and complete the experimental research process for the synthesis, API analysis, preparation, preparation analysis, pharmacological effect of the drug, etc., [5].

3. Experiment Teaching Builds Research Platform

The experiment is an essential content in the field of pharmacy. Through the experiment teaching, theoretical knowledge is applied to the experiment operation to further understand the theoretical knowledge and exercise the practical ability. Secondly, in the process of experiment, it has a subtle influence on the cultivation of scientific research thinking. The experiment teaching has broken through the past students' theoretical knowledge instilled by teachers, and changed from passive to active to learn and prove, virtually cultivated students' ability in independent learning. In pharmaceutical research and development, inspection and other positions, it is necessary for practitioners to have the ability of independent experiment and master the professional quality required by various experiments. In the experiment of traditional Chinese medicine identification, it is necessary to practice day by day from the making of specimen and slice, and the observation of slice. For the observation of different slices in traditional Chinese medicine, it is necessary to identify its significant characteristics, thus making quick and accurate judgment and identify its

authenticity.

3.1. Setting up independent design experiments

The independent design experiment is led by the tutor, and the students are independent in the form of group, independent design, independent discussion and independent completion. Before the beginning of the experiment, relevant literature is searched and collected in response to the possible problems in the experiment proposed by the tutor. Through the problem-based teaching, students are guided to design the experiment purpose, experiment principle, required reagent equipment, experiment steps, observation indicators, etc., and write a detailed experiment plan. In the process of experiment, team members work together and cooperate closely. At the end of the experiment, the experimental results are analyzed based on the experimental data, and the tutor-led the students to discuss and answer the problems in the experiment.

3.2. Opening innovation experiment training

Sixteen innovative experimental training laboratories, including the open analytical chemistry laboratory, the organic chemistry laboratory, the pharmaceutical botany, the traditional Chinese medicine resource room, the traditional Chinese medicine processing laboratory, etc., are established in the college of pharmacy. This has set up a good experimental platform for students and stimulated their enthusiasm for scientific research and exploring the unknown. Students can complete the whole content independently through independent proposition and tutor's guidance, or directly participate in the teacher's topic to complete part of the content. In the extraction and separation experiment of ephedrine alkaloids, students separate and extract ephedrine orderly according to the teacher's handout and experimental steps.

3.3. Participating in teacher research projects

Through the cultivation of professional foundation and basic experimental skills, many students have certain experimental literacy. At the same time, teachers in the college of pharmacy often choose a group of excellent students to join their own scientific research projects and engage in certain project contents. Compared with college students' daily experiments, teachers' scientific research projects are more practical, complex and comprehensive. For students who can participate in scientific research experiments, it is a good opportunity to exercise their experimental ability.

It is necessary to participate in teachers' scientific research projects, play the academic role of tutors, promote the transformation of scientific research projects into experimental content, and let students contact and participate in the research of teachers' scientific research projects. With the practical and rigorous scientific research style of teachers, students will be infected, encouraged to explore boldly and strove to innovate, and their thinking and practical ability will be trained [6].

3.4. Completing the graduation experiment project

According to students' own interests and hobbies, professional advantages, employment direction and career planning, the graduation experiment project can be completed in the pharmaceutical department of the hospital, food and drug inspection and testing center, pharmaceutical enterprises, Astragalus Academy of Qiqihar Medical University and pharmaceutical experimental center. The graduation project of Chinese medicine major involves the direction of Chinese medicine chemistry, Chinese medicine pharmacology, Chinese medicine identification, etc. The research contents include extraction and separation of effective components, mechanism of effective components, identification characteristics of medicinal parts, quality control and analysis, census of resources in traditional Chinese medicine, etc.

4. The practice of Medicinal Botanical Gardens

With more than 800 kinds of medicinal plants in Heilongjiang province as the focus, the college of pharmacy will build a herbarium and botanical garden in traditional Chinese medicine, and students can explain and compile the atlas of medicinal plants independently. They set up an industrial platform, develop the "north medicine planting project" and build a genuine medicinal material planting base in Qiqihar. It is beneficial to combine theory with practice, and apply microscopic identification and physicochemical identification of traditional Chinese medicine in practice.

As a professional practice base of Chinese medicine, students can participate in the cultivation of traditional Chinese medicine. In the process of planting, they can directly observe the morphological characteristics of traditional Chinese medicine. By collecting specimens, the powder characteristics are observed under the microscope.

5. Exploration and Improvement

Traditional Chinese medicine identification theory is more conceptual and difficult to remember. However, most of the students have a psychological conflict with the concept of memory. In order to alleviate the boring teaching methods in the classroom and mobilize students' enthusiasm, traditional Chinese medicine identification needs to explore new methods to improve the existing teaching mode and teaching quality.

5.1. Summary induction

Many Chinese medicinal materials have characteristics in common, which is summarized together, such as liquorice, azedarach, cortex phellodendri, acorus calamus, matrine, kudzu root, senna leaf, etc. The medicinal parts of traditional Chinese medicine are easy to be confused in the process of memory, and they can be memorized by compiling short and smooth stories. For example, the medicinal parts of tubers are *Arisaema consanguineum* Schott, *Gastrodia elata*, *Bletilla hyacinthina* Reichb, *Alisma*, *corydalis* tuber, *Pinellia ternata*, *Bletilla hyacinthina* Reichb, and the medicinal parts of tubers can be memorized by compiling a two days three diarrhea half white beard, which is convenient for memory.

5.2. PBL teaching mode

The PBL teaching mode is student-centered, and the teacher puts forward specific questions according to the individual cases distributed to the students. The students carry out the specific division of labor and cooperation according to the questions put forward by the teacher, and makes full use of the resources of the network and library to collect the information related to the unit's drugs and prescription preparations [7]. The PBL teaching mode, which adopts the three-stage teaching mode of setting questions, discussing and summarizing, is helpful for the students to grasp the content as a whole, strengthen the subjective initiative of learning, and improve the ability of language expression and team cooperation.

5.3. "Four-in-one" teaching method

The teaching method consists of four parts: the input of written words, the explanation of oral language, the visual stimulation of multimedia courseware pictures, and the practical application of medical materials. The correct use of "four-in-one" teaching method can solve many problems of teaching theory and practice in the course, and it is a means to promote the development of teachers themselves and cultivate students' self-learning consciousness. It is not only helpful for teachers to improve the teaching level, but also can significantly improve the teaching effect. At the same time, it is more conducive to the improvement of students' abilities and cultivates students' comprehensive analysis ability and innovation ability [8].

6. Conclusion

The training for talents in traditional Chinese medicine identification plays a key role in the development of traditional Chinese medicine in the new era. To ensure the safety and effectiveness of genuine herbs is directly related to the life safety and medical effect of patients. Accurate medical diagnosis is the premise of effective treatment for the disease, and accurate medication is the key to the final cure for the disease. As a subject with a strong application, it is very important to grasp the combination of theory and practice, to study the basic theory, identification technology and methods, and to establish and improve the applied personnel training system.

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