

# Construction of an Innovative Evaluation Scheme for the Cultivation of Academic and Professional Master's Degrees in Traditional Chinese Pharmacy under the Background of "Breaking the Five-Only Principle"

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**Abstract:** Building world-class universities and disciplines is a significant opportunity for China's higher education to catch up with itself and achieve a leap forward. General Secretary pointed out that talent is the primary resource, and the fundamental source of a country's scientific and technological innovation lies in people [1]. For a long time, there have been problems in the evaluation system of scientific and technological talents in China, such as unscientific evaluation standards and low degree of socialization of evaluation. The evaluation of graduate talent cultivation in Chinese universities has problems such as incomplete system, imperfect system, and non-standard methods [2]. Faced with the ever-changing practice of technological innovation, we are increasingly aware that the original evaluation system for master's students can no longer meet the needs of innovative development. It is necessary to improve the innovation oriented classification evaluation system for graduate student training quality, enhance the scientificity, rationality, and fairness of the evaluation system, and better stimulate the innovation and creativity of the majority of master's and professional students [3]. The graduate education quality innovation classification evaluation system guided by innovation ability, quality, effectiveness, and contribution plays a key role in fully mobilizing the enthusiasm, initiative, and creativity of master's and specialized master's degrees in traditional Chinese medicine, promoting master's students to focus on research and innovation, and promoting innovation driven development.

**Keywords:** Breaking through the Five Unifications; Master's degree in Traditional Chinese Medicine; Master's degree in Traditional Chinese Medicine; Innovation evaluation

## 1. Introduction

Following the national education policy and adhering to the educational purpose of "serving the reform and development of the country, the development of traditional Chinese medicine, the comprehensive progress of local economy and society, and the construction of a human health community", the innovative evaluation plan aims to "cultivate practical, innovative, and entrepreneurial talents with market competitiveness that meet the needs of social progress and the development of traditional Chinese medicine", and cultivate advanced specialized talents in traditional Chinese medicine with good comprehensive qualities and a broad international perspective [4].

## 2. Master's degree program in Pharmacy

### 2.1 Overall Training Objectives

Following the national education policy and adhering to the educational purpose of "serving the reform and development of the country, the development of traditional Chinese medicine, the comprehensive progress of local economy and society, and the construction of a human health community", we promote the school motto of "only learning, only people, seeking strength, and seeking excellence", and aim to "cultivate practical, innovative, and entrepreneurial talents with market competitiveness that meet the needs of social progress and the development of traditional Chinese medicine".

## **2.2 Years of study**

The duration of graduate studies in Traditional Chinese Medicine is 3 years, with the first semester being the theoretical teaching stage, followed by professional practice and thesis stage [5].

## **3. Innovative Classification Evaluation Scheme for Master's Degree in Traditional Chinese Medicine**

### **3.1 Knowledge Objectives**

Chinese medicine students are fully familiar with the relevant knowledge, theories and skills of Chinese medicine, and master the new knowledge, new theories and new skills related to various professional directions of Chinese medicine. Chinese medicine students can undertake practical problems and specific work in the development and utilization of Chinese medicine resources, production, identification, quality evaluation and control of Chinese medicine preparations.

### **3.2 Research direction**

#### **3.2.1 Traditional Chinese Medicine Agents**

Guided by the theory of traditional Chinese medicine, various methods and means are used to conduct research on the formulation theory, new technologies, new dosage forms, formulation stability, and bioavailability of traditional Chinese medicine preparations, in order to achieve modernization of traditional Chinese medicine preparations.

#### **3.2.2 Analysis of Traditional Chinese Medicine**

Chinese medicine students use methods and techniques from physics, chemistry, biology, microbiology, etc., to study the qualitative and quantitative analysis of drugs, quality control of drugs, and development of new drugs, in order to ensure the stable quality, reliable efficacy, and safe use of traditional Chinese medicine [7].

#### **3.2.3 Traditional Chinese Medicine Chemistry**

The main research focuses on the chemical structure, extraction and separation methods and techniques, identification and analysis methods, biotransformation and metabolism of active ingredients or pharmacological substances in traditional Chinese medicine.

#### **3.2.4 Pharmacology of Traditional Chinese Medicine**

Chinese medicine students apply modern scientific theories and methods to study and reveal the mechanisms and material basis of the pharmacological effects of traditional Chinese medicine, and guide the rational use of drugs in clinical practice.

#### **3.2.5 Processing of Traditional Chinese Medicine**

Chinese medicine students research the theory, process, specifications, etc. of traditional Chinese medicine processing, and ensure the safety, rationality, and effectiveness of clinical medication by transforming drug properties, enhancing drug efficacy, and modifying the properties of adjunctive drugs.

#### **3.2.6 Traditional Chinese Medicine Resources**

Through the application of modern traditional Chinese medicine identification, ecological planting, and molecular biology techniques, research on Chinese medicine varieties and herbal medicine is carried out to improve the efficiency of authentic medicinal resource development and utilization, and promote the sustainable utilization of Chinese medicine resources.

#### **3.2.7 Clinical Traditional Chinese Medicine**

Guided by the theory of traditional Chinese medicine, focusing on the clinical application of traditional Chinese medicine and the study of drug properties, this study aims to scientifically expound the theory of traditional Chinese medicine properties, providing scientific basis for solving common, frequent, and difficult clinical diseases.

### ***3.3 Curriculum Design***

During the period of pursuing a full-time academic master's degree, a minimum total of 27 credits of courses should be taken, including 18 credits of degree courses (including 6 credits of public courses, 8 credits of professional basic courses, and 4 credits of professional courses), and a minimum of 9 credits of non degree courses (including 7 credits of public courses and 2 credits of professional courses), while completing 3 credits of scientific research and practice.

### ***3.4 Cultivation Methods***

Graduate supervisors are responsible for guiding graduate students in developing personal training plans, writing thesis proposals and theses, conducting academic (scientific) research, and organizing academic exchanges.

## **4. Innovative Classification Evaluation Scheme for Professional Master's Degree in Traditional Chinese Pharmacy**

### ***4.1 Knowledge Objectives***

The university trains students to master solid basic theories and systematic professional knowledge of Chinese pharmacy, have applied knowledge of Chinese pharmacy and the ability of innovative research, and be able to undertake scientific research, professional technical work, management, pharmaceutical care and other work. Students have a systematic understanding of the theoretical basis of Chinese pharmacy, a comprehensive familiarity with the professional knowledge and skills of traditional and modern Chinese pharmacy, and a timely understanding of the academic and industrial development trends and frontiers of the discipline and industry at home and abroad.

### ***4.2 Research Directions***

#### ***4.2.1 Traditional Chinese Medicine Resources and Identification***

Chinese medicine students have the ability to investigate and analyze the distribution status and advantageous location of Chinese medicine resources, and have the basic theory, knowledge and skills of extracting and processing Chinese medicine preparations.

#### ***4.2.2 Traditional Chinese Medicine Pharmaceutics***

Chinese medicine students master the basic theories and knowledge of traditional Chinese medicine pharmaceutics, the preparation methods and production processes of traditional Chinese medicine dosage forms and preparations, and possess the practical skills for engaging in the production, management, and quality control of traditional Chinese medicine pharmaceutics.

#### ***4.2.3 Processing of Traditional Chinese Medicine***

Chinese medicine students master the basic theoretical knowledge of traditional Chinese medicine processing and the modern processing techniques of traditional Chinese medicine decoction pieces. Based on inheriting the traditional processing techniques and theories of traditional Chinese medicine, they improve the processing technology, formulate the quality standards for decoction pieces, and enhance the quality of traditional Chinese medicine decoction pieces.

#### ***4.2.4 Quality Control of Traditional Chinese Medicine***

With the aim of standardization of Chinese medicine, the common key issues such as quality evaluation and control technology of Chinese medicinal materials, Chinese herbal slices and proprietary Chinese medicine were studied. It can meet the needs of enterprises, engaged in the identification of Chinese medicinal materials, Chinese medicine quality standards testing, purification, compound structure identification and other work.

### ***4.3 Curriculum Setting***

During the period of pursuing a degree, postgraduate students of this major should complete a minimum of 27 credits of courses, including 20 credits of degree courses (including 5 credits of public courses, 6 credits of professional basic courses, and 9 credits of professional courses), 7 credits of

non-degree courses (including 5 credits of public courses and 2 credits of professional courses), and at the same time complete 7 credits of scientific research and practice [9].

#### **4.4 Professional Practice**

According to the research direction, postgraduate students should carry out professional practice in relevant units of the traditional Chinese medicine industry for no less than 12 months, which is arranged in the second and third semesters.

##### **4.4.1 Content of Professional Practice**

(1) Traditional Chinese Medicine Resources and Identification (Complete 2 - 3 items):

① Master the empirical identification terms, main morphological characteristics, and identification key points of plant medicines such as root and rhizome, bark, leaf, flower, fruit and seed, resin, as well as animal and mineral medicines.

② Master common microscopic slide - making methods (free - hand sectioning, sliding microtomy, surface sectioning, powder sectioning, etc.) and their application scopes.

③ Master common analysis and identification methods for Chinese medicinal materials, such as micro - sublimation identification, microscopic chemical identification, determination of extract content, determination of content by high - performance liquid chromatography or gas chromatography.

④ Master the general extraction, separation, and identification methods and techniques of traditional Chinese medicine chemical components, the structural types (alkaloids, terpenoids, volatile oils, triterpenoids, steroids, etc.), physicochemical properties, extraction and separation, basic knowledge and skills of important chemical components.

⑤ Master the structural types, physicochemical properties, and identification methods of components contained in more than 10 common traditional Chinese medicines, and be familiar with the main biosynthetic pathways of traditional Chinese medicine chemical components.

(2) Processing of Traditional Chinese Medicine (Complete 2 - 3 items):

① Be familiar with the basic technical processes of traditional Chinese medicine processing and be proficient in operating the processes of cleaning, cutting, and processing of Chinese medicinal materials.

② Be familiar with the enterprise - based production quality standards of 2 - 3 different types of commonly used traditional Chinese medicine decoction pieces in clinical practice, and be able to use analysis and detection methods such as UV, TLC, HPLC, and GC - MS to inspect the quality of decoction pieces.

③ Master relevant laws and regulations on drug production management, including the "Drug Administration Law", "Regulations for the Implementation of the Drug Administration Law", "Good Manufacturing Practice for Drugs", etc.

④ Master the key process technologies of traditional Chinese medicine decoction piece production, understand the reasons affecting product quality and solutions, and learn relevant knowledge of traditional Chinese medicine decoction piece production.

⑤ Master the characteristic traditional processing techniques of Zhangbang and Jianchangbang in traditional Chinese medicine, and understand the processes and processing effects of traditional characteristic decoction pieces.

(3) Traditional Chinese Medicine Pharmaceutics (Complete 2 - 3 items):

① Be familiar with the basic operations of extraction, separation, purification, and concentration of Chinese medicinal materials, as well as the working principles and operation techniques of the pharmaceutical equipment involved.

② Be able to complete specific work processes and job tasks according to the technological process of pharmaceutical preparation, referring to the requirements of preparations before preparation, raw and auxiliary material picking operations, and traditional Chinese medicine preparation forming techniques.

③ Be familiar with the basic principles of traditional Chinese medicine dosage form selection, be

able to classify various traditional Chinese medicine preparations, and correctly and proficiently use the "Chinese Pharmacopoeia".

④ Be familiar with the design of traditional Chinese medicine preparation workshops and the management content of GMP for drug production; be able to design the process layout of traditional Chinese medicine preparation workshops according to GMP requirements.

⑤ Be familiar with the operation process flows and the working principles and standard operating procedures of the operation equipment of 2 - 3 different traditional Chinese medicine preparations.

⑥ Master relevant laws and regulations on drug production management, etc.

⑦ Master the key process technologies of drug production and learn relevant knowledge of on - site drug production management.

(4) Quality Control of Traditional Chinese Medicine (Complete 2 - 3 items):

① Master the concept of impurities in traditional Chinese medicine, general and special impurity inspection methods, and the requirements of impurity profiles.

② Master the basic principles, contents, and methods of formulating quality standards for Chinese medicinal materials, traditional Chinese medicine decoction pieces, or proprietary Chinese medicines.

③ Master modern analysis methods of traditional Chinese medicine analysis, and understand the method characteristics of gas chromatography - mass spectrometry, liquid chromatography - mass spectrometry, and liquid chromatography - nuclear magnetic resonance hyphenated technologies.

④ Understand the safety evaluation of traditional Chinese medicine and the overall quality control methods of traditional Chinese medicine.

#### **4.4.2 Professional Practice Departments**

(1) Postgraduate Innovation Base.

(2) Drug production enterprises.

(3) Clinical Pharmacy Departments and Pharmacies of hospitals.

(4) Pharmaceutical companies: Registration Department, Office, Policy Research Office.

(5) Government departments: Traditional Chinese Medicine Administration, Food and Drug Administration, etc.

#### **4.4.3 Course Examination and Assessment Methods**

Both degree courses and non - degree courses are uniformly organized for teaching and examination by the Graduate School. Practical skill courses are assessed by practice supervisors. Professional practice is assessed by an assessment committee composed of the Graduate School, the School of Pharmacy, and the practice unit [10].

#### **4.5 Training Methods**

The training adheres to the principle of combining theory with practice and learning from practice. Focus on the transformation of science and technology into productive forces, it should achieve the optimal allocation of social high-quality resources. It adopts training methods such as "joint training between the school and the graduate innovation base" or "school-enterprise cooperation" and "school management and dual supervision and production". The theoretical teaching of postgraduate students is completed at the school, and the practical part is implemented at the base, enterprise, or relevant management department. Teaching methods include course lectures, case discussions, professional internships, etc., and are taught by experts with rich practical experience in the R & D, registration, production, circulation, application, and supervision of traditional Chinese medicine.

### **5. Degree Thesis**

Writing a degree thesis by postgraduate students is a comprehensive training for them to conduct scientific research or undertake specialized technical work. It is an important part in cultivating postgraduate students' innovation ability and their ability to comprehensively apply the knowledge they

have learned to discover, analyze, and solve problems.

While taking courses, postgraduate students should extensively read literature, conduct investigations and research, and get familiar with the domestic and international research trends in their professional fields. Under the guidance of their supervisors, they should formulate research topics. Before starting the research, postgraduate students should write a literature review of the research topic and give an opening report before the end of the third semester. During the research process, postgraduate students should regularly report on the progress of their research projects as planned. After completing the degree thesis, it will go through processes such as duplicate rate detection, pre - defense, and double - blind review. Only after passing these processes can they apply for the degree thesis defense.

## **6. Mid - term Assessment**

To strengthen the management of postgraduate students and ensure the quality of postgraduate training, mid - term assessment of postgraduate students is necessary. The mid - term assessment is carried out at the end of the fourth semester after enrollment. The mid - term assessment of postgraduate students is the responsibility of the college. An assessment team will be formed to assess postgraduate students in terms of their course learning, thesis work, practical ability training, and teaching practice. The mid - term assessment results are divided into four grades: excellent, good, pass, and fail [11].

## **7. Graduation Qualification and Degree Conferral**

Postgraduate students who complete the learning tasks specified in this training program within the specified study period, earn the required credits, pass the degree thesis defense, and perform qualified in terms of morality, intelligence, physical fitness, aesthetics, and labor, and meet the graduation requirements will be allowed to graduate and be issued graduation certificates. Postgraduate students who meet the "Regulations of the People's Republic of China on Academic Degrees" and the degree - conferring conditions of Jiangxi University of Chinese Medicine, upon their own application, after review by the degree evaluation sub - committee of their college, and approval by the university's degree evaluation committee and no objections after publicity, will be conferred a master's degree and issued a degree certificate [12].

## **8. Conclusion**

Improving the innovative classification evaluation system for the training quality of academic and professional master's degrees oriented towards innovation ability, and enhancing the scientific, rational, and fair nature of the evaluation system play a crucial role in fully mobilizing the enthusiasm, initiative, and creativity of postgraduate students, ensuring the effective implementation of postgraduate education in universities in all aspects, promoting postgraduate students to engage in in - depth research and innovation, and driving the realization of innovation - driven development. It also helps universities cultivate more talents with high - quality, high - skills, and high - competitiveness [13].

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