



A Database on Traditional Chinese Medicine Treatment for Drug Addiction

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Abstract

Background and objectives: Traditional Chinese medicine (TCM) has been used to treat drug addiction for more than 160 years, and has accumulated valuable experience in the detoxification and rehabilitation of patients. The aims of this project were (1) to establish a computerised, bilingual (Chinese–English) database on TCM treatment for drug addiction, (2) to analyse the literature features published in this field, and (3) to identify the commonly used Chinese herbs as well as toxic herbs for drug addiction.

Methods: (1) Paper collection: related papers were collected through electronic databases and hand-searched materials. (2) Data computerisation: the Microsoft Access programme and Delphi language were used as the major data management systems. (3) Paper analysis: annual publications from 1989 to 2003 were classified and calculated. (4) Herbal analysis: the frequency of commonly used herbs and herbal function categories were analysed.

Results: (1) A special bilingual database (CDR) that contained 340 professional literatures including 85 patent files on TCM treatment for drug addiction was established, in which more than 90% of the publications originated from Mainland China; (2) besides the translation of the titles, author (patentee) names, institutions, sources, abstracts and keywords, the database also uniquely included the translations of all herbal names (Chinese names, Chinese pinyin, English names or Latino botanical names) in published papers; (3) the literature classification showed an increase of publications in this field over the past decade, and, the number of papers on clinical and laboratory researches, in particular, had a significant increase; and (4) five functional categorisations of Chinese herbs and ten most frequently used Chinese herbs as well as three toxic herbs were identified from more than 200 herbs reported in 150 original research articles and 85 patent literatures.

Conclusion: It was the first time that the published data on TCM in treatment of drug addiction had been systematically analysed by using a new database, and the results are valuable for further laboratory and clinical studies to obtain more direct evidence.

Key words: Database, traditional Chinese medicine, Chinese herbal therapy, drug addiction, detoxification

1. Introduction

Drug abusers have a wide variety of medical and social problems including drug overdose, AIDS, violence and other behaviour-related disorders such as family dysfunction, unemployment and legal problems (Goldstein & Herrera, 1995; Ward et al., 1999; Wyshak and Modest, 1996). Searching effective and safe therapies for drug addiction is one of the most important research targets in this field. Traditional Chinese medicine (TCM) has been used in the treatment of drug addiction for more than 160 years, and has accumulated valuable experience in the detoxification and rehabilitation of patients (Xin et al., 1999; Shong, 2001). Thus, TCM was recommended as a potential approach to the treatment for drug addiction in the 2000-2002 Plan on Drug Treatment and Rehabilitation Services of Hong Kong promulgated by the Narcotics Division of the Hong Kong Government.

In the past 15 years, an increasing number of research papers in this field had been published, but they were scattered in various publications and media in different forms. This obscured the search for related study findings by computer databases and other ways. In addition, there was a language barrier to the foreigners who would like to read the papers as the majority (>90%) of them were published in Chinese journals without complete English translation. The establishment of a database on TCM treatment for drug addiction will provide essential support for all professionals including scientific researchers, medical professionals, social workers and policy planners. The aims of this project were (1) to establish a computerised, bilingual (Chinese–English) database on TCM treatment for drug addiction, (2) to analyse the literature features published in this field, and (3) to identify the commonly used Chinese herbs as well as toxic herbs for drug addiction.



2. Method

2.1 Database establishment

There were three steps in the procedure for establishing the database, i.e. literature collection, literature translation, data management and computerisation. Fig.1 showed a flow chart on the database establishment.

2.1.1 Literature collection

The related papers were collected through electronic databases including the Database of Chinese Science Journals (中文科技期刊數據庫), CBMdisc (中國生物醫學文獻數據庫), China Patent Infolnet (中國專利資訊網), the Database of Chinese Journals of TCM (中國中醫藥期刊文獻數據庫), the Database of Chinese Herbs (中國中藥數據庫), the Database of Products of Chinese Medicine (中國醫藥產品數據庫), the Database of Chinese New Medications (中國新藥品種數據庫), Cochrane Library, MEDLINE, BIOSIS, CINAHL, World Cat, Article First, etc. A search strategy was designed by integrating the following key words: Chinese medicine, Chinese herbs, herbal medicine, herbal therapy, acupuncture, drug addiction, abuse, abstinence, detoxification, withdrawal symptoms, opioid, heroin, morphine, etc. All databases were searched from their dates of commencement to June 2003. In addition, hand searching for conference abstracts as well as Chinese and English journals from June of 2003 to the latest available copies in the Chinese Medicine Library at the Hong Kong Baptist University and Guangzhou University of Chinese Medicine was undertaken.

2.1.2 Literature translation

Besides bilingually translating the titles, author (patentee) names, institutions, sources, abstracts and keywords of the published papers in Chinese and English, the database also uniquely included the translations of the hundreds of herbal names (Chinese names, Chinese pinyin, Latino names or Latino botanical names) in the published papers.

2.1.3 Data management and computerisation

Bilingual abstracts (Chinese and English) of collected papers were input into computers, and the Microsoft Access programme and Delphi language were selected as data management systems of the database. All names of herbs and herbal formulae reported by original researches were listed in

the item of “Key words” following abstracts of the papers, thus searching herbs could be done conveniently and instantly by this database.

2.2 Data analysis

2.2.1 Literature analysis

The content and feature of published literatures recruited in the database were analysed including: (1) the accounts of published literatures in different categories (literature reviews, clinical researches, laboratory researches, patent files of herbal medicines, theory studies and news), and (2) the annual accounts of published literatures from 1989 to 2002.

2.2.2 Herbal analysis

The various kinds of Chinese herbs reported in literatures were analysed, by which the most frequently used herbs and herbal functional categories as well as toxic herbs were identified respectively from the original research articles and patent files. A herbal name in the same formula reported in different literatures were counted once, and herbs in formulae not fully listed in published papers were not counted.

3. Results

3.1 CDR of database

A bilingual database (CDR) on TCM treatment for drug addiction was established, which contained 340 published professional literatures including 85 patent files. Based on an extensive search and collection, it should be the most comprehensive and updated database in the field so far.

3.1.1 Installation of database

(1) The minimum system requirements for computers: ① Microsoft Windows 95 or above, ② 1024 x 768 dpi screen resolution, and ③ 30Mb free hard disk space.

(2) Installation of CDR: By following the installation command that automatically popped up on the desktop of a computer, a file named CMDA could be handily and instantly installed from CDR to the



computer. Then, the computer could run the CDR.

3.1.2 Function and operation

Standard functions of the database (CDR) included bilingual searching, reading, saving, printing and so on, and it also stored some herbal pictures. The detailed steps of application of the database were illustrated in the following figures (Fig. 2-6).

3.2 Literature analysis

The result of literature collection showed that more than 90% of the papers originating from Mainland China were published in Chinese. USA, European countries and Asian countries such as Japan and Thailand had also performed some researches related to this topic. 340 published professional literatures including 85 patent files could be classified into six groups, and the amount and percentage of literatures in different categories were shown in Table 1. In addition, the literature analysis indicated an increase of publications over the past decade in this field; in particular, the number of Chinese papers on clinical and laboratory researches had a significant increase (Fig. 7).

3.3 Herbal analysis

3.3.1 Commonly used herbal function categories

The results indicated that more than 200 Chinese herbs were reported in 150 original research literatures and 85 patent files. These herbs had a very broad functional spectrum, and might be classified into 23 functional categories according to the classification system of Chinese herbal medicine. The top five function categories were tonifying herbs (補益強壯藥), herbs for promoting blood circulation and removing blood stasis (活血化癥藥), herbs for clearing away heat (清熱藥), herbs for tranquilising the mind (安神藥) and herbs for exterior syndrome (解表藥).

3.3.2 Commonly used herbs

In 150 original research literatures and 85 patent literatures, the top ten kinds of the most frequently used herbs were Radix Glycyrrhizae (Gancao, 甘草), Poria (Fuling, 茯苓), Rhizoma Corydalis (Yanhusuo, 延胡索), Radix Angelicae Sinensis (Danggui, 當歸), Radix Ginseng (Renshen, 人參), Radix Astragali (Huangqi, 黃耆), Rhizoma Atractylodis Macrocephalae (Baizhu, 白朮), Semen Zizyphi

Spinosae (Suanzaoren, 酸棗仁), Radix Polygalae (Yuanzhi, 遠志) and Flos Daturae (Yangjinhua, 洋金花).

3.3.3 Commonly used toxic herbs

According to the Handbook on Toxicological Aspect of Chinese Medicine, in which 31 herbs were listed as toxic herbs, 13 of them were found in the 63 original research literatures and patent files collected by this database. They were Radix Sophorae Tonkinensis (Shandougen, 山豆根), Radix Aconiti (Chuanwu, 川烏), Radix Aconiti Kusnezoffii (Caowu, 草烏), Radix Aconiti Lateralis Preparata (Fuzi, 附子), Semen Hyoscyami (Tianxianzi, 天仙子), Rhizoma Arisaematis (Tiannanxing, 天南星), Rhizoma Pinelliae (Banxia, 半夏), Radix Kansui (Gansui, 甘遂), Rhizoma Typhonii (Baifuzi, 白附子), Cinnabaris (Zhusha, 朱砂), Flos Daturae (Yangjinhua, 洋金花), Realgar (Xionghuang, 雄黃) and Venenum Bufonis (Chansu, 蟾酥). The top three toxic herbs which were frequently used and reported were Radix Aconiti Lateralis Preparata (Fuzi, 附子), Flos Daturae (Yangjinhua, 洋金花) and Rhizoma Pinelliae (Banxia, 半夏).

4. Discussion

Based on an extensive search and collection, a most comprehensive and updated bilingual database (CDR) on TCM treatment for drug addiction has been established, which contains 340 professional literatures including 85 patent files. The results of literature categorisation and classification showed a significant increase of publications on clinical and laboratory researches in the recent years. This reflected that the clinical application and experimental research of TCM in drug detoxification and rehabilitation gained popularity, and the quality of research data was also improved gradually.

For systematic search of related literatures in this project, we had screened various Chinese databases by our well-designed searching strategy. A total of 141 and of 99 non-overlapping related literatures were found in the Database of Chinese Science Journals (中文科技期刊數據庫) and CBMdisc (中國生物醫學文獻數據庫) respectively. These results indicated that large scale integrated databases could only provide part of related literatures, of which the data proportion was below 50% of our total collections. Some scholars (Zhan, 2002) pointed out that multi-discipline databases could only provide approximately 2/5 of literatures in a specific domain; and “grey literatures” such as conference theses, degree theses, patent files and also drug development research reports were far more difficult to be accessed through general databases. Therefore, our computerised,



bilingual (Chinese–English) database on TCM treatment for drug addiction is non-replaceable in professional application value so far. In order to maximise the utility of this database, we suggest updating it every three years.

Almost all published data from Mainland China as well as other countries claimed that TCM including Chinese herbal therapy (CHT), acupuncture therapy and Qi-gong therapy might be potential ways for treatment of drug addiction. CHT was the most commonly used therapy for drug detoxification in the published literatures collected by our database. Based on data analysis in this study, the five function categories of Chinese herbs and the ten Chinese herbs were identified as the most commonly used herbal medicine for drug detoxification. It will be valuable to perform further pharmacological experiments and clinical trials on the efficacy of these herbs for obtaining direct evidence.

According to TCM theories, the clinical manifestations of drug addicts mostly belong to the “deficiency syndrome (虛證)”. Even though they may have “excessive symptoms (實症)”, it is most probably “asthenia in pathogenesis but sthenia in manifestations (本虛標實)”. Our analysis indicated that tonifying herb was the top one of the five frequently used herbs in functional categorisation; and among the ten most frequently used herbs, Radix Glycyrrhizae (Gancao, 甘草), Radix Angelicae Sinensis (Danggui, 當歸), Radix Ginseng (Renshen, 人參), Radix Astragali (Huangqi, 黃耆) and Rhizoma Atractylodis Macrocephalae (Baizhu, 白朮) are typical tonifying herbs. These findings matched the understanding and the therapeutical principles of TCM theories. Contemporary pharmacological researches proved that many tonifying herbs exerted significant regulatory effects on the neuroendocrine system and immune system (Hou, 2002). This can be a pharmacological foundation for exploring efficacy of herbal treatment for drug addiction.

It is well known that the withdrawal syndrome during acute detoxification can be controlled rapidly by different therapies, but to overcome the protracted abstinence syndrome that is closely related to the relapse rate in patients has been one of the unsolved problems. Some Chinese papers have reported a beneficial effect of herbal therapy on longer-term protracted abstinence syndrome during rehabilitation period (Zhang & Zhou, 1995; Mo et al., 2002). The efficacy and safety of CHT on treatment of protracted abstinence syndrome deserve further confirmation by long-term clinical trials.

The analysis of herbal safety in treatment of drug addiction indicated that over half of the herbal formulae reported in original research papers contained toxic herbs, and there were 13 in 31 kinds of the top toxic herbs that were listed in the guideline on the toxicity of Chinese herbs (Clinical Toxicology Task Force for Chinese Medicine, Hospital Authority, Hong Kong, 2002) used in the original research papers. These toxic herbs may have therapeutic effects for drug addiction; however, they should be applied cautiously as the safety of many herbal formulae including patent preparations is still unclear.

Clinical observations suggested that the common adverse effects recorded in some trials were dizziness, nausea, vomiting, dry mouth, fatigue, faint, sweating and palpitation that might happen less frequently than the therapies using Western medications. However, some trials found that herbal preparations had significant adverse effects, to which great attention should be paid. For example, in the trials of Fukangpian, more than 17.76% of participants suffered from delirium during treatment (Guo et al., 1995). This suggests that a standard assessment on the safety of herbal preparations is absolutely necessary in further pre-clinical and clinical researches.

Patent files were an important resource for our herbal analysis in this project, but it was difficult to verify the veracity of the patent herbal formulae collected in the study. It is because a herbal formula is easy to be modified by changing its herbal composition or ratio; actual protection for patent herbal formulae is very limited currently. In consideration of this reason, it is understandable for some patentees to list herbal composition of prescriptions partly in their patent, which may cause bias in our analysis; however our preliminary analysis at least has summarised some valuable messages from patent files on the herbal prescriptions and special herbs to treat drug addition.

Besides CHT, other TCM therapies such as acupuncture and Qi-gong may also be potential ways for drug addicts to detoxify (Chu, 1996a; Chu, 1996b; Chu, 1996c; Mo, 1999). Acupuncture therapy including body acupuncture and ear acupuncture has some prominent merits as an effective, safe, handy and economical way for clinical treatment. Clinical trials indicated a capacity of acupuncture to treat heroin dependence, and experiment studies proved that acupuncture could improve biosynthesis, expression and release of endogenous opiate peptides in the body, which may be a main mechanism for acupuncture to treat the opioid withdrawal syndrome. A review of 21 papers (about 2 500 cases) reported that the short-term effective rate of acupuncture therapy was 46% and long-term (more than one year) effective rate was 10% (Chu, 1996a; Chu, 1996b; Chu, 1996c).



A systematic analysis of optimal acupoints and stimulating parameters is still insufficient in this aspect.

5. Conclusion

In summary, the published literatures on TCM treatment for drug addiction were captured and analysed for the first time by using a new database that might help policy makers, clinical doctors and researchers obtain the accumulated knowledge and latest information in the field. Such information may be of profound importance in formulating an evidence-based policy on TCM for treatment of drug addiction. Further clinical and laboratory studies that focus on the herbs identified by a preliminary analysis of this project may directly offer more valuable evidence of TCM treatment for drug addiction.

Acknowledgement

This project was supported by the Beat Drugs Fund of Hong Kong. The authors wish to acknowledge Dr. Zhao Zhongzhen at the Hong Kong Baptist University for providing herbal pictures captured from his book, *An Illustrated Chinese Materia Medica in Hong Kong*, sponsored by the Eu Yan Seng (Hong Kong) Limited.

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Zhang JP & Zhou M. (1995). Clinical observation of Antidrug II on protracted abstinence syndrome. *Neimenggu Journal of Traditional Chinese Medicine* 14(4):4.

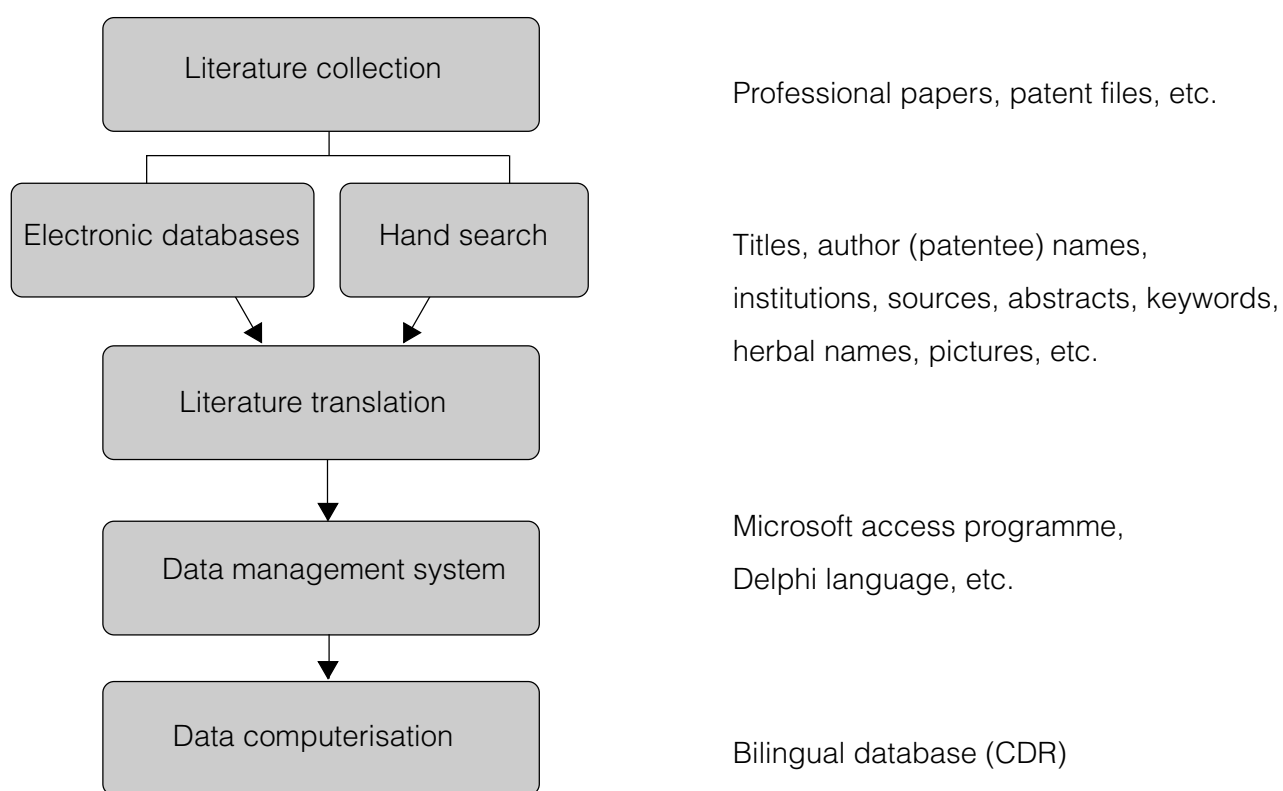


Fig. 1 Flow chart on the establishment of a database of TCM treatment for drug addiction



Fig. 2 Entering the database and selecting the language service (Step 1)



Fig. 3 Searching papers by key words (Step 2)



Fig. 4 Choosing papers by marking the titles (Step 3)



Fig. 5 Displaying abstracts of the selected papers in English or Chinese (Step 4)

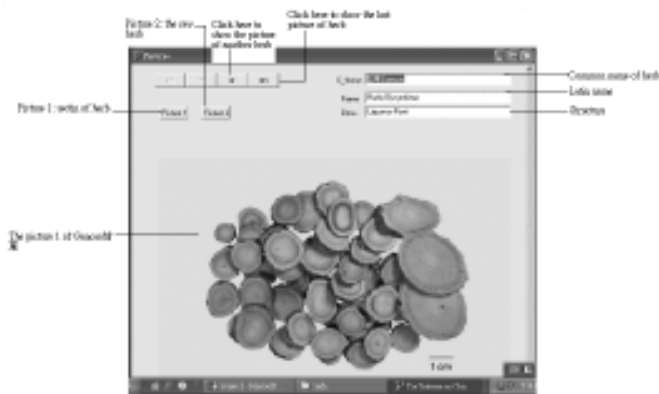


Fig. 6 Displaying herbal pictures (Step 5)

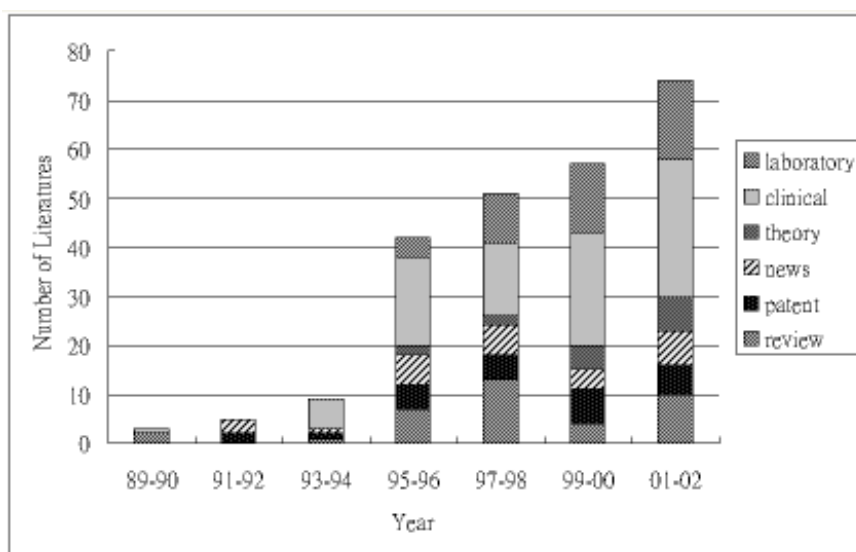


Fig. 7 Annual accounts of published Chinese literatures in the different categories from 1989 to 2002



Tab. 1 Analysis of the categories of published papers

Categories	Amount (%)
Clinical researches	104 (30)
Patent files	85 (25)
Review papers	52 (15)
Laboratory researches	46 (14)
News	36 (11)
Theory studies	17 (5)
Total	340