Comparative analysis of the nomenclature of medicinal raw materials and producing plants permitted for medical use in the Russian Federation and included in the State Fund of the PRC

T.L. Kiseleva, I.A. Samylina, A.A. Karpeev, Yu.A. Smirnova, E.V. Tsvetaeva, Lu Guodong
(Institute of Homeopathy and Naturotherapy of the Federal Scientific Clinical experimental center for traditional methods of diagnostics and treatment of Roszdrav, Moscow Medical Academy. THEM. Sechenov

At the moment, naturopathy in Russia is on the rise, it has a good base and guidelines for the systematic development and creation of a scientifically grounded national school of traditional medicine. The method is in demand by the population and specialists; its effectiveness and safety are scientifically substantiated and confirmed [8, 10, 13]. This is consistent with the global trends in the development of medical science and practice, manifested, on the one hand, in the steady complication of the latest therapeutic and diagnostic technologies, on the other hand, in the increasing role and importance of traditional means and methods of treatment, especially in cases of long-term and chronic diseases [9 -eleven].

To date, interest in naturopathy is well-founded and supported by the positive results of the application of the method and official medicinal products (MPs) of natural origin in clinical practice [23].

The People's Republic of China is one of the world's states that have two parallel educational systems and, accordingly, two systems for providing medical care to the population: the so-called "Western" (academic) and traditional [14, 15, 20, 21]. In 1992, the separation from the Ministry of Health of the PRC of a special ministry (the Main Directorate of Chinese Traditional Medicine and Pharmacology of the PRC), dealing with all the problems of traditional medicine (TM) in the country, made it possible over the past 15 years to transfer to a qualitatively new level not only the system of providing traditional medical care in China, but also all activities to provide the population with medicinal products of natural origin.

The Government of the PRC attaches particular importance to the study and implementation of the centuries-old experience of Chinese TM and, in particular, scientific research in the field of drugs of natural origin [14, 15, 20, 21].

Thanks to the efforts of the General Directorate of Chinese Traditional Medicine and Pharmacy in the PRC in recent years, the introduction of medicinal raw materials and TM preparations into practical healthcare has become a planned process that provides for an integrated systematic approach to a comprehensive study of research objects from historical, preclinical (toxicological and pharmacological), clinical and pharmaceutical points of view [12, 14, 15, 21].

At the same time, the Government of the PRC proceeds from the fact that the requirements for the quality of drugs used by the so-called. "Western" medicine and traditional Chinese medicine should be on the same level. Only under this condition, natural drugs will be able to provide a reproducible therapeutic result from the standpoint of evidence-based medicine and take a worthy place in the Chinese and world drug market [12].

Due to the strong position and state support of traditional medicine in the PRC, drugs of natural origin are in great demand both by the population and by doctors. This registration system has been in effect for only 3 years and so far there are not enough drugs registered in the established order in the country.

Thus, a balanced, purposeful policy of the State Council of the People's Republic of China in the sphere of circulation (and, in particular, standardization) of traditional drugs has led to tangible positive results in providing the population with effective and safe drugs of natural origin. Existing experience in raising the level of standardization

raw materials and traditional drugs, the timely setting of the relevant tasks and scientifically substantiated solution to them in a planned manner made it possible to transfer the problem of developing drugs of natural origin in the PRC to a qualitatively new level on a national scale [12].

Every year in Russia the arsenal of drugs of natural origin permitted for medical use and biologically active additives (BAA) to food is expanding, including due to new drugs and dietary supplements from China. There are few scattered bibliographic data in Russian and Chinese languages that the flora of some regions of Russia and the PRC in a number of positions coincides or is characterized by closely related plant species used in academic and traditional medicine in both countries.

Therefore, of interest is a comparative analysis of the nomenclature of medicinal plants (RR) of medicinal plant raw materials (RR), animals and raw materials of animal origin, permitted for medical use on the territory of the Russian Federation (RF) [3, 5] and included in the State Pharmacopoeia of China (GF PRC) [2].

The purpose of this work is a comparative analysis of the nomenclature of medicinal products, approved for medical use in the Russian Federation and included in the State Pharmacopoeia of the PRC, as well as producing plants from which the procurement of these types of raw materials is permitted. The objects of the study were the "State Register of Medicines" (GR of drugs) and the State Pharmacopoeia of the PRC (GF of the PRC), since in Russia all registered drugs, including those of natural origin, as well as natural raw materials are included in the GR of drugs [4, 5]. This is the only official document containing information about drugs and raw materials approved for medical use in the Russian Federation in accordance with the established procedure. The GF of the People's Republic of China is currently the main document regulating the quality of drugs and medicinal products, including natural origin, and serves as the basis for the introduction of a standardization system for raw materials and drugs of natural origin in China. The PRC GF is constantly improving. This process has begun to develop especially actively over the past 30 years. Since 1990, the publications of the State Fund of the People's Republic of China have been carried out regularly every 5 years. In our research, we used the latest edition of 2005 [2], which has not yet been translated into English (the State Foundation of the PRC is not translated into Russian).

Study of the nomenclature of producing plants and medicinal raw materials, approved for medical use in the Russian Federation

The current GR of drugs consists of 2 volumes. We did not include Volume 2 in the present study, since it contains only typical clinical and pharmacological articles.

To study the nomenclature, we used only the first part of the 1st volume of the GR, which contains the state registration numbers for the objects of domestic origin of interest to us. Otherwise, the comparison would not be correct, since the 2nd part of the 1st volume includes only foreign medicinal, preventive medicine and diagnostic products that are approved for medical use and import into Russia, but registered for a specific manufacturing company or a trusted company. ... In addition, to date, the GR does not contain at least one name of Chinese-made plant raw materials, registered and allowed to be imported into the Russian Federation from the PRC.

We studied the nomenclature in accordance with the 2nd section "Medicines" from the 1st chapter of the 1st part of the 1st volume [5, p. 93-492]. The data presented in the 1st section "Substances, standard samples and excipients" of the 1st chapter of the 1st volume were not included in the study.

In the last GR RF MP [5] there are no names of producing (medicinal) plants and Latin names of medicinal plant raw materials; GF USSR XI edition [3] contains information about only a small part of the total number of permitted types of medicinal products and medicinal products, and comparative

research is possible only if available. Therefore, first we selected the corresponding botanical names of the LR in Russian, and then the Latin names for all the species of LR and LRS mentioned in the GR [5].

To do this, we used RD for medicinal plant raw materials, documents of the World Health Organization (WHO) [34, 35], reliable literature sources that determine the priority of botanical names [19, 26, 27] and educational pharmacognostic literature [17, 18, 24, 25, 28]. In total, we found in the GR of drugs [5] 279 names of medicinal plant species, the procurement of which is permitted from more than 316 producing medicinal plants.

To carry out comparative studies of the nomenclature, we compiled a grid of the table "Produce plants and medicinal plant raw materials, approved for medical use in the Russian Federation and included in the State Fund of the PRC" (Table 1). After carrying out this stage of research, we entered into this table all the Latin and Russian names of the Republic of Lithuania.

Table 1

Study of the nomenclature of producing plants and medicinal raw materials, included in the State Pharmacopoeia of the PRC

Русское название производящего растения	Разрешены к применению в РФ		Разрешены к применению в КНР		Китайское название производящего растения
	Латинское название производящего растения	Морфологические группы сырья (русское и латинское названия)	Латинское название производящего растения	Морфологические группы сырья (русское и латинское названия)	

Since all permitted types of LR in Chinese and Latin are included in the PRC State Fund, we had only one object of research. As a result of this stage of work, we filled in the appropriate columns in the table. In total, we found 539 medicinal products and 462 medicinal products.

Comparative analysis of the nomenclature of producing plants and plant raw materials approved for medical use in the Russian Federation and included in the State pharmacopoeia of the PRC

After completing the research, the original table contained only 813 medicinal plants (316 species in the Russian Federation and 539 species (excluding subspecies) in the PRC) and 721 species of medicinal plant raw materials (279 species in the RF and 462 in the PRC), permitted either in both or in one of the countries.

As a result of the research, the original table was filled in, but empty columns remained in it. This happened in cases where any type of RL or medicinal raw materials procured from them was permitted only in one of the countries. In particular, there were no Chinese names for objects approved for medical use only in the Russian Federation, and vice versa - there were no Russian names for objects that were part of the PRC State Fund, but were not approved for medical use in Russia.

This was one of the most difficult problems. To solve it, we used the available bibliographic sources [2; 5-7; 17-19; 24-26; 29–32], a Chinese-Russian dictionary [1] and a unique publication by A.I. Schreter and V.A. Panasyuk "Dictionary of plant names", containing 100 thousand names of about 10 thousand species and varieties of flowering and fern-like plants in Latin, Russian, English and Chinese (in hieroglyphic and Latinized spellings) [33].

As a result of the analysis of the obtained table, the following was established. 1. At the same time, 42 types of LR are allowed both in the Russian Federation and in the PRC.

2. Allowed only in the Russian Federation and is not included in the State Fund of the PRC 274 types of LR.

3. Allowed only in the PRC and is not included in the GR of the Russian Federation 497 types of the Republic of Lithuania.

4. Permitted in the Russian Federation and in the PRC are different species of the same genus of the Republic of Lithuania. Such cases (according to the number of genera) found 43. For example, in the Russian Federation they use Dzhungarian aconite (Aconitum soongaricum Stapf.), Northern aconite (A. Septentionare Koelle) and white-mouth aconite (A. Leucostomum Worosch.), And in China Kuznetsov's aconite (A. Kusnezoffii Reichb.) And Carmichel's aconite (A. Carmichaeli Debx.).

5. In the Russian Federation and in the PRC, along with the coinciding ones, other types of the same are allowed genus LR. There were 20 such cases (by the number of births). For example, in both the Russian Federation and the PRC, ordinary calamus (Acorus calamus L.), but Tatarinov's calamus (Acorus tatarinowii Schott) is also used in China.

6. 260 types of medicinal plant products allowed only in the Russian Federation and not included in the State Fund of the PRC were found. For example, the roots of marshmallow (Radices Althaeae).

7. There were 390 types of medicinal plant products permitted only in the PRC and not included in the GR of the Russian Federation. For example, Tatar aster (Radix et rhizoma Asteris).

8. Allowed at the same time both in the Russian Federation and in the PRC from the same type of medicinal product types of medicinal products (or whose names differ only in number, for example, "seed" - "seeds") 20 was discovered. For example, the rhizome of the mountaineer snake (Polygonum bistorta L .; Rhizoma Bistortae).

9. From the same type of LR in Russia and in China use different morphological groups of raw materials (or their names do not coincide). For example, the raw material of the highest ailant (Ailanthus altissima (Mill.) Swingle) in the Russian Federation is a fruit (Fructus Ailanthi), and in the PRC -root bark (Cortex Ailanthi). Such cases have been foundeighteen.

All the results of the analysis were summarized by us in tables 2, 3.

table 2

The results of the analysis of the conformity of the types of medicinal products permitted for medical use in RF and PRC

№ п/п	Применение в РФ и КНР	Количество видов ЛР
1.	Всего разрешено в РФ	316
2.	Разрешены только в РФ и не входят в ГФ КНР	274
3.	Всего разрешено в КНР	539
4.	Разрешены только в КНР и не входят в ГР РФ	497
5.	Разрешены одновременно в РФ и в КНР	42
6.	Разрешены в РФ и в КНР разные виды одного и того же рода (по количеству родов)	43
7.	В РФ и в КНР наравне с совпадающими разрешены и другие виды одного и того же рода ЛР (по количеству родов)	20

Table 3

Results of the analysis of compliance of medicinal product types permitted for medical use in Russia and China

№ п/п	Применение в РФ и КНР	Количество видов ЛРС
1.	Всего разрешено в РФ	279
2.	Разрешены только в РФ и не входят в ГФ КНР	259
3.	Всего разрешено в КНР	462
4.	Разрешены только в КНР и не входят в ГР РФ	442
5.	Разрешены одновременно в РФ и в КНР	20
6.	От одного и того же вида ЛР в России и в Китае используют различные морфологические группы сырья (или не совпадают их названия)	18

Tables 2 and 3 show that, contrary to some publications based on various kinds of bibliographic sources, but not on official documents, at the same time in the Russian Federation and China, a limited number of types of medicinal products and medicinal products are allowed for medical use.

The nomenclature of producing plants matches only 42 positions, which is 13.3% of the total number of medicinal products (316 species) permitted for use on the territory of the Russian Federation, and 7.8% of the total number of LR (539 species) included in the PRC State Fund.

The nomenclature of medicinal products is the same for 20 objects, that is, by 7.2% of the total number of medicinal products (279 types) used in the territory of the Russian Federation and 4.3% of the total number of medicinal products included in the PRC State Fund (462 species).

This can probably be explained by the following:

1. Despite a fairly long common border, our countries have significant differences in natural and climatic conditions.

2. Russia and China have different cultural and medical traditions.

3. The national health systems of our countries have significant differences, concerning, in particular, the official position of traditional medicine and the attitude towards it and traditional medicines by the Governments of our countries. Next, we analyzed the species composition of the RL approved for medical use in both countries. To do this, we conditionally divided all these LRs into the following groups:

1 - the most numerous - Plants growing or cultivated in almost all climatic zones: common calamus (Acorus calamus L.), Amur velvet (Phellodendron amurense Rupr.), Black henbane (Hyoscyamus niger L.), snake mountainweed (Polygonum bistorta L.), bird highlander (Polygonum aviculare L.), Sarepta mustard (Brassica juncea (L.) Czern.et Coss.), Tall elecampane (Inula helenium L.), St. .), medicinal burnet (Sanguisorba officinalis L.), flax (Linum usitatissimum L.), large burdock (Arctium lappa L.), raspberryordinary (Rubus idaeus L.), coltsfoot (Tussilago farfara L.), wild carrot (Daucus carota L.), sea buckthorn (Hippophae rhamnoides L.), annual pepper (Capsicum annuum Lsl), milk thistle (Silybum marianum (L.) Gaerth.), Smooth licorice (Glycyrrhiza glabra L.), Ural licorice (Glycyrrhiza uralensis L.), common fennel (Foeniculum vulgare Mill.), Common chicory (Cichorium intybus L.), garlic (Allium sativum L.) , Rosa rugosa Thunb., Eucommia ulmoides Oliv., Tribullus terrestris L., Ephedra equisetina Bunge.

2 - Plants growing or cultivated in the border regions of Russia and China: the highest ailanth (Ailanthus altissima (Mill.) Swingle), Nippon dioscorea (Dioscorea nipponica Makino), real ginseng (Panax ginseng (L.) CA Mey), Daurian black cohosh (Cimicifuga dahurica (Turcz.) Maxim.), Japanese kelp (A Laminaria japonica.),Chinese lemongrass (Schizandra chinensis (Turcz.) Baill.), Tangut rhubarb (Rheum tanguticum Maxim.), Baikal skullcap (Scutellaria baicalensis Georgi).

3 - Plants imported to Russia, but growing wild or cultivated in China: acutifolia cassia (Cassia acutifolia Del.), Narrow-leaved cassia (Cassia angustifolia Vahl.), American lakonos (Phytolacca americana L.), Japanese sophora (Sophora japonica L.), vomiting chili-buha (Strychnos nux-vomica L.).

Taking into account such a limited number of simultaneously allowed for use on the territory of the Russian Federation and the PRC, types of RL, as well as all the species diversity of the RRs presented, it is possible to identify further directions for the study and possible introduction of RR of official Chinese medicine into domestic health care.

For example, in the PRC, a number of drugs are officially used in medical practice, which have not only a long history of medicinal, but also food use in the Russian Federation. it

common watermelon (Citrullus lanatus (Thunb.) Matsumu. et Nakai), real star anise, orstar anise (Illicium verum Hook.f.), medicinal ginger (Zingiber officinale Rosc.),aromatic cinnamon (Cinnamomum cassia Presl), Indian sesame (Sesamun indicum L.),long turmeric (Curcuma longa L.), walnut (Juglans regia L.), long pepper (Piper longum L.), black pepper (Piper nigrum L.), mandarin (Citrus sinensis Osbeck) and other species of the genus Citrus, garden purslane (Portulaca oleracea L.), sowing radish (Raphanus sativus L.), ricesowing (Oryza sativa L.), various types of plums (Prunus sp.), Large soybeans (Glycine max (L.) Merr.), Oriental persimmon (Diospyros kaki Thunb.), White mulberry (Morus alba L.), barleyordinary (Hordeum vulgare L.).

Some plants presented in the PRC GF also deserve attention as promising domestic sources of official medicinal plant raw materials, since they grow or are cultivated in Russia and have long been known in domestic folk medicine. For example, this is the Tatar aster (Aster tataricus Lf), eastern biota (thuja) (Platycladus orientalis (L.) Franco),thistle bristly (Cirsium setosum (Willd.) MB.), Medicinal verbena (Verbena officinalis L.),buckwheat goat leaf (Bupleurum scorzonerifolium Willd.), Hay fenugreek (Trigonella foenum-graecum L.), broom wormwood (Artemisia scoparia Waldst.et Kit.), Daurian rhododendron (Rhododendron dauricum L.), branchy rush (Juncus effusus L.) Equisetum hiemale L.), common blackhead (Prunella vulgaris L.), etc.

At the same time, there is a hypothetical possibility of expanding the species composition of RL (after additional study), allowed for harvesting in Russia, due to closely related species. For example, black cohosh rhizomes (Rhizoma Cimicifugae) in the Russian Federationare harvested only from Daurian black cohosh (Cimicifuga dahurica (Turcz.) Maxim.). In Chinato obtain this type of medicinal plant, black cohosh is also used (Cimicifuga foetida L.), whichalso common in the forests of Siberia.

This information and analytical study opens up prospects for a more efficient use of the natural resources of both countries, and will also contribute to the safety of using Chinese-made drugs registered in Russia and greater efficiency of measures taken by the Governments of Russia and China aimed at improving the health status of the population of our countries.

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