

## Medicinal plants in the French Pharmacopoeia

Yu.A. Smirnova

(Federal Scientific Clinical and Experimental Center for Traditional Diagnostic Methods and treatment of Roszdrav, Moscow)

### SUMMARY

An informational and analytical study of the nomenclature of types of medicinal plant raw materials included in the French Pharmacopoeia of the X edition and permitted for use as allopathic medicines was carried out. Taking into account the fact that until now the texts of the pharmacopoeia are printed in French, and the Latin names duplicate only the titles of monographs, the author compiled a summary table of plants of the French Pharmacopoeia, the information in which is arranged in alphabetical order of the Latin names of plants. This approach to the presentation of the material makes it easier to work with the texts of the Pharmacopoeia and other specialized literature in French and expands the search for information on medicinal plants for non-French-speaking users. Analysis of the nomenclature made it possible to establish

One of the rather difficult questions for specialists working in the field of standardization of medicinal herbal raw materials and preparations based on it, to this day, remains work with the French Pharmacopoeia. This is due to the specific features of the presentation of information in this publication in comparison with the European and other national pharmacopoeias.

The French Pharmacopoeia of the X edition [1] is currently the main document in France that regulates the quality of medicines (including natural origin) and medicinal plant materials (MPR) along with the European Pharmacopoeia. As noted in the preamble to the X edition of the French Pharmacopoeia, the latter contains exclusively national texts and monographs that are additions to the European Pharmacopoeia. Thus, both pharmacopoeias should be guided by both pharmacopoeias when determining the specifications of substances for pharmaceutical use in France.

The first edition of the State Pharmacopoeia in France appeared in 1818 and was called "Codex Medicamentaris gallicus". This was the only Latin edition of the Pharmacopoeia of this country. The Pharmacopoeia of 1837 (second edition) and all subsequent ones were published in the national language with Latin titles. Until now, the texts of the pharmacopoeia are printed in French, and the Latin names duplicate only the titles of monographs.

According to French legislation, the sale of medicinal plants included in the X edition of the Pharmacopoeia is carried out only through the pharmacy network [1]. Most of the types of plant materials included in the first seven editions of the French Pharmacopoeia (from 1818 to 1965) were not included in the eighth edition and were thus excluded from the list of drugs to be sold in pharmacies. But already in the 9th edition, all herbal substances mentioned in all editions of the Codex Medicamentarius Gallicus from 1818 were returned.

By the time the Xth edition of the French Pharmacopoeia was being prepared, it became necessary to revise the list of medicinal plant medicinal products officially approved for use on the territory of the country, since some of them were "outdated", the indications for the use of a number of herbal substances changed, and new types of raw materials were introduced and medicinal plants (as raw materials). Currently, the process of unification of the requirements of the European and national pharmacopoeias is inevitable, which also entails changes in the requirements for the quality of plant raw materials. Thus, the additions and changes included in the current X edition of the French Pharmacopoeia mainly affected medicinal plants and sources of homeopathic raw materials - an area in which the competence of French specialists is generally recognized.

in groups.

The first group consists of medicinal products, monographs on which are in the general section of the "Monographs" of the French Pharmacopoeia. Before the beginning of this section, it is noted that monographs on substances, including of plant origin, used for the manufacture of homeopathic medicines, are grouped separately at the end of the chapter. In fact, these monographs are highlighted in a separate volume, and the types of medicinal products given in them constitute the second group.

The third, most numerous group - medicinal plant and, accordingly, producing plants included in a separate "LIST OF MEDICINAL PLANTS FRENCH PHARMACOPEIA" [1]. Published in 2005, the list consists of two parts:

- LIST A "Traditionally used medicinal plants",
- LIST B "Medicinal plants used traditionally in the composition or in the form of drugs whose undesirable potential effects exceed the expected therapeutic benefit."

This list was worked on by an expert group at the National Pharmacopoeia Committee. In the course of the study, scientific materials were collected regarding each type of plant raw material, the main attention was paid to botanical aspects (scientific name, parts used, geographical origin, conditions of raw material production, falsification), chemical composition (qualitative and quantitative composition of biologically active substances and markers), pharmacological data (activity, in vitro and in vivo studies, galenic forms, dosage), toxicology (exposure results, overdose, pharmacological alertness), clinical studies (experimental data, area of food or medical use) and undesirable factors (toxicity, interaction with other drugs, contraindications, pregnancy) when using these types of plant materials. For each medicinal plant, its French name, the scientific name currently accepted, the botanical family, the part used and, in the case of the plant belongs to list B, the part or parts of the plant known to be toxic, have been clarified.

In list A, the types of plant materials used not only for therapeutic purposes, but also used on a daily basis as food products or as spices are highlighted in color. These types of medicinal products were removed from the national French pharmaceutical monopoly (i.e., they were allowed to be sold not only through the pharmacy chain).

In addition, 96 types of medicinal plant raw materials that were present in the previous edition were withdrawn from the French Pharmacopoeia as obsolete, having no indications other than cosmetic and food, or used for the manufacture of drugs as fillers, dyes, flavorings, etc.

This publication presents the results of our information and analytical study of the nomenclature of medicinal plant species included in the French Pharmacopoeia of the X edition and allowed for use as allopathic medicines (types of raw materials belonging to the group of homeopathic remedies are the topic of a separate study, in this article we will touch on we will not). The result of the study and generalization of the information received was a summary table, including the Latin and Russian names of the producing plant (plus synonyms), the name of the medicinal plant species permitted for use in France. As already mentioned, in the French Pharmacopoeia, the names of plants in French are priority, and monographs and plants in the lists are ordered according to the French alphabet, therefore, in the summary table, we also added the French names of the producing plant, both given in the pharmacopoeia, and some other well-known synonyms. However, the information is arranged by us in alphabetical order of the Latin names of plants. This approach to the presentation of the material makes it easier to work with the texts of the Pharmacopoeia and other specialized literature in French and expands the search for information on medicinal plants for non-French-speaking users.

Analysis of the summary table made it possible to establish that the X edition of the French Pharmacopoeia included 554 species of medicinal plant raw materials, which are harvested from more than 512 species of producing plants. The section "Monographs" presents 72 articles on medicinal plant resources from 83 species of producing plants.

The contradictions we discovered in the text of the publication are very interesting. In particular, from the introduction to the section "List of medicinal plants ..." it is known that in part A of the list today there are 326 medicinal plants, in part B - 113. However, when counting, 378 species of medicinal plants were mentioned in list A, and the figure 326 refers rather to the positions (lines) of the list, if at the same time we exclude synonyms of plant names in French mentioned in a separate line in the list and different types of raw materials from the same producer

plants. This discrepancy arises from the fact that for some types of medicinal plant medicinal products the pharmacopoeia provides for several producing plants.

146 types of raw materials from 171 producing plants from list A have food use. In list B - 113 items (also excluding synonyms), which included 126 types of medicinal plant raw materials from more than 132 plant species. In a separate table (table 1) we have summarized medicinal plants, the raw materials of which are not used in France in their native form, but are allowed for use only in the form of medicines or excipients. This group of drugs is present in almost every pharmacopoeia. Table 1 shows 6 medicines and excipients, and the number of producing plants for their production is slightly higher (seeds of several *Prunus* species are used to make nuclear oil).

The total number of pharmacopoeial medicinal products of natural origin (essential and fatty oils, tinctures, extractive preparations, etc.) is much wider, but this table does not include the types of producing plants for which medicinal plant raw materials are also official.

The results of this information and analytical study can be used to carry out a comparative analysis of the nomenclature of producing plants and medicinal products of the French Pharmacopoeia and other pharmacopoeias, incl. domestic, as well as to track the dynamics and trends of changes in the nomenclature of medicinal plants as a reflection of world experience in this area of pharmacy.

Table 1

Plants producing, raw materials of which in France are allowed for use only in the form of medicines or excipients

Латинское название производящего растения	Русское название производящего растения	Название ЛС, разрешенного к применению во Франции, и ЛРС для его изготовления, примечания	Французское название производящего растения и ЛС
<i>Abies sibirica</i> Ledeb.	Пихта сибирская	масло эфирное (из побегов (ветвей) свежих)	<i>Sapin de Sibérie, huile essentielle d'aiguilles de sapin de Sibérie</i>
<i>Citrus aurantium</i> L. subsp. <i>bergamia</i> (Wight et Arnott) Engler	Померанец бергамотовый	масло эфирное (из кожуры плодов)	<i>Bergamote, huile essentielle de bergamote</i>
<i>Mentha cardiaca</i> Gerard	Мята сердечная	масло эфирное (из травы), (допускается к использованию наравне с маслом из надземной части <i>Mentha spicata</i> L. (= <i>M. viridis</i> L.))	<i>Menthe, huile essentielle de menthe</i>
<i>Prunus</i> sp.	Слива (различные виды)	масло ядерное (из семян)	<i>Prunier, huile de noyaux</i>
<i>Theobroma cacao</i> L.	Какао (шоколадное дерево)	масло какао (из семян)	<i>Cacaoyer (cacao, cacaotier), beurre de cacao</i>
<i>Triticum durum</i> Desf.	Пшеница твердая	мука пшеничная	<i>Blé dur (blé à macaroni), gruau-D (farine basse extradite)</i>

### Literature

1. Pharmacopée Française. - X edition AFSSAPS, 1989-2005.

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