Divulgação

PLANT - A bibliographic database about medicinal plants

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RESUMO: "**PLANT - Uma base de dados bibliográfica sobre plantas medicinais**". Neste trabalho nós apresentamos a base de dados bibliográfica - PLANT, que vem sendo desenvolvida pela equipe da Biblioteca da Faculdade de Farmácia da Universidade Federal de Minas Gerais (UFMG). A partir desta base de dados, é possível obter informações sobre plantas medicinais presentes em periódicos nacionais, grande parte deles não indexados. O objetivo do PLANT é contribuir para o desenvolvimento de novos fitoterápicos, especialmente com plantas medicinais nativas do Brasil.

Unitermos: PLANT, base de dados, plantas medicinais, periódicos brasileiros.

ABSTRACT: In this article we presented a bibliographical Database - PLANT, developed by the Library of the Pharmacy School from Universidade Federal de Minas Gerais (UFMG). From this database, it is possible to retrieve information on medicinal plants present in the Brazilian bibliography, which in great part are not indexed. The objective of PLANT is to contribute for the development of new herbal products, especially those with Brazilian plants.

Keywords: PLANT, database, medicinal plants, Brazilian periodicals.

INTRODUCTION

In previous studies, we presented the lists of medicinal plants and other botanical products described in the four Editions of the Brazilian Official Pharmacopoeia (FBRAS) (Brandão et al., 2006; 2008a). In another recent study we showed native plants, identified by European naturalists who travelled in Minas Gerais in the 19th century, and which were included in FBRAS (Brandão et al., 2008b). The main objectives of those studies were to recuperate and make available information about the traditional use of native medicinal plants in Brazil. These studies can be able to predict or to rank ordering plants as to their probability of having specific biological properties, if properly investigated.

Several data about native medicinal species can be also found in old national periodicals. Great part of this bibliography is not indexed, and therefore it is difficult for researchers to access such information. In our continuous efforts to contribute for the divulgation of data about Brazilian medicinal plants, we have created the "PLANT-Database", which was developed for the

Library of Pharmacy School from Universidade Federal de Minas Gerais. The objective of PLANT is to organize and to make available data on Brazilian medicinal plants published in Brazilian periodicals.

CONSTRUCTION OF THE DATABASE

File design

The development of PLANT database required considerable efforts prior to computerization of appropriate data. The first step was literature collection, and this has been carried out in 22 periodicals deposited in the Library of the Pharmacy School from Universidade Federal de Minas Gerais. Each issue of these periodicals was search for articles which describe any information about medicinal plants. The articles about studies with plants were then separated and carefully revised. The articles were then classified in four relevant fields which were used to populate the database: (i) theme of the study; (ii) taxonomic information; (iii) chemical substances and (iv) biological, pharmacological and/or

toxicological data.

The field 'theme of studies' was defined according to the following keywords:

1) Farmacognosia (Pharmacognosy)
1.1) Farmacobotânica, anatomia, microquímica, morfologia (Pharmacobotany, anatomy, microchemistry, morphology);
1.2) Farmacoergasia, aclimatação, comercialização, cultivo (Pharmacoergasy, aclimatization, commercialization, cultivate);
1.3) Química, cromatografia, doseamento (Chemistry, chromatography, quantitative determination);
1.4) Farmacopéia (Pharmacopoeia)
2) Botânica, sistemática, taxonomia, etnobotânica (Botany, sistematics, taxonomy, ethnobotany);
3) Fitoquímica, espectroscopia, isolamento, quimotaxonomia (Phytochemistry,
spectroscopy, isolation, chemotaxonomy);
4) Farmacologia, etnofarmacologia, toxicologia (Pharmacology, ethnopharmacology, toxicology);
5) Farmacotécnica, tecnologia (Pharmacotechnique, pharmaceutical technology);
6) Clínica (Clinical aspects);
7) Biotecnologia, cultura celular (Biothecnology, cell culture);
8) Ecologia (Ecology);
9) Etimologia (Etymology);
10) História (History).

The second group of keywords is correlated with taxonomic information. The scientific names (or genus), Botanical Family as well as different traditional/ popular names of each studied plant were also included as keywords. The third group refers to the chemical substances detected in the plants (45 keywords), and the fourth group to biological, pharmacological or toxicological activities observed in studies (63).

After de definition of the keywords the PLANT-Database was populated. The articles were indexed according to ABNT standards (ABNT is the Brazilian institute responsible for defining standards). The organization of data was conducted with MicroIsis (software freely supplied by UNESCO). It is worth noting that some collections and new data are being included continuously.

Data retrieval

The following examples illustrate the information we can obtain in PLANT-Database:

Example (1): When we insert the keyword "*etnobotânica*" (ethnobotany) we retrieve 139 articles; sixty of them have been publicized before the 60´s, and describe the use of plants in the first decades of the 20th

century in Brazil.

Example (2): The kewword "*flavonóide*" (flavonoid) furnished 116 articles; most of them were publicized from the 80's and refers to chemical and biological/ pharmacological studies of this class of substances.

Example (3): Nineteen articles can be obtained with the keyword "*antimalárico*" (antimalarial), thirteen of them publicized in the 40's. The articles refer to 42 botanical species, including studies about the importance of aclimatation of *Cinchona* species, evaluation of extracts antimalarial activity, as well as clinical effects of some plants.

The information about the plants can be obtained in the followed format:

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Autor: PINTO, M.

Titulo do artigo: A fitoterapia

Fonte: Rev. Flora Med., Rio de Janeiro, v.9, n.4, p.193-199, 1942
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Autor: SIGEL FILHO, E.

Titulo do artigo: Caracterizacao e doseamento da quinina na droga

Fonte: Trib. Farm., Curitiba, v.16, n.1, p.1-9, 1948
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IMPORTANCE OF PLANT - DATABASE

Databases about medicinal plants are very necessary since they allow the organization and a quick recovery of multidisciplinary information. One of the first Databases about natural products was the NAPRALERT, constructed in the 1980s in the University of Illinois (Loub et al., 1985). NAPRALERT covers the chemistry and biological activities of extracts and/ or secondary constituents isolated from or identified in plants. Other types of databases have been developed in other parts of the world, aiming at organizing information about medicinal plants. In Brazil, a database about medicinal plants was partially developed by *Programa Flora*, granted by CNPq from 1976 to 1984. The objective of that database was to organize information from herbariums, libraries and field works done in Brazil. Unfortunately, that program was deactivated and the information was not organized (Fernandes, 2004). Nunes and Imamura (1996) also describe the development of a database for data organization from field work and, recently, the Brazilian Environmental Ministry also started the construction of another database about Brazilian medicinal plants (Available from the Internet: www.mma.gov.br. Access in: 23/06/2008).

PLANT is www.mma.gov.br. a bibliographical database. It has been constructed since 1999, and was designed to retrieve data about medicinal plants published (mainly in non-indexed journals) in the

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Table 1. Examples of periodicals indexed in PLANT and numbers of articles publicized in each decade.

Title of Periodical / Local	Numbers of articles indexed in PLANT-Database in each decade								Total
	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	
Arquivos do Jardim Botânico do Rio de Janeiro/ Rio de Janeiro	8	6	-	16	13	49	-	13	105
Cadernos de Farmácia / Porto Alegre	-	-	-	-	-	-	27	93	120
Ciência e Cultura / São Paulo	-	-	-	10	6	-	-	-	16
Memórias do Instituto Oswaldo Cruz / Rio de Janeiro	-	-	-	1	-	2	7	31	41
Oréades / Belo Horizonte	-	-	-	-	-	47	65	-	112
Revista Brasileira de Farmácia / Rio de Janeiro	-	16	91	21	41	85	80	134	468
Revista Brasileira de Farmacognosia / São Paulo, João Pessoa	-	-	-	-	-	-	44	-	44
Revista Ceres / Viçosa (MG)	-	-	-	5	6	5	-	-	16
Revista de Ciências Farmacêuticas / São Paulo	-	-	-	-	-	-	24	35	59
Revista da Escola de Farmácia e Odontologia de Alfenas / Alfenas (MG)	-	-	-	-	1	-	10	16	27
Revista de Farmácia e Bioquímica da UFMG / Belo Horizonte	-	-	-	-	2	7	13	11	33
Revista de Farmácia e Bioquímica da Universidade de São Paulo / São Paulo	-	-	-	-	-	42	37	25	104
Revista da Flora Medicinal / Rio de Janeiro	-	-	160	20	-	-	-	-	180
Revista do Instituto Adolfo Lutz / São Paulo	-	-	5	4	3	2	13	22	49
Revista do Instituto de Medicina Tropical de São Paulo / São Paulo	-	-	-	-	1	1	2	9	13
Rodriguesia / Rio de Janeiro	-	1	-	8	-	-	24	12	45
Semina / Londrina (PR)	-	-	-	-	-	-	7	25	32
Tribuna Farmacêutica / Curitiba	-	64	184	57	69	36	29	15	454
Total	8	87	440	142	142	281	382	441	1918

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Brazilian bibliography. The objective is to contribute with drug development, since its contains data normally not accessible and important for research development in the fields of pharmacognosy, natural product chemistry, botany, biochemistry, pharmacology and other areas correlated with the studies of plants. Currently, the PLANT-Database has more than 2,000 articles indexed which were published from 1920 until nowadays in 22 Brazilian periodicals. Many studies describe macroscopical and microscopical analyses of vegetal drugs, which can be useful for the quality control of herbal drugs. Another papers describe ethnobotanical/ethnopharmacological data about native species, essential for proper direction of pharmacological researches. Clinical data can also be found in studies published until 1950 - this information can be important if we consider that at that time the majority of medicine in Brazil was prepared with plants.

Table 1 shows the number of articles published by decade in eight periodicals indexed in PLANT - Database. In the 20's, eight articles have been published in "*Arquivos do Jardim Botânico do Rio de Janeiro*" (Archives of the Rio de Janeiro's Botanical Garden). In the 30's, this number is increased due to 16 publications in "*Revista Brasileira de Farmácia*" (Brazilian Journal of Pharmacy) and 64 in "*Tribuna Farmacêutica*" (Pharmaceutical Tribune). The highest numbers of articles were published, however, in decade 1940, with 160 studies published in "*Revista da Flora Medicinal*" (Journal of Medicinal Flora). In the 50's and 60's the number of periodicals with studies on medicinal plants has grown, but the number of studies is lower considerately. The same decline in interest on medicinal plants in 1950-1960 can be also observed in the Brazilian Official Pharmacopoeia, in which most of Monographs about medicinal plants were excluded from the second Edition, published in 1959 (Brandão et al., 2006; 2008a). Sociological studies shown that from 1950 to 1970, the Brazilian society passed through a period of intensification of a series of transformations, initiated in previous years and achieved full development in this period (Carvalho, 2003; Telles, 2007). They ranged from a reorganization of the Brazilian industrial park to the creation of what some authors call "consumption society", passing for a large cultural reordering. As a consequence, in the decade of 1970, for example, the commercial pharmacies already had lost the importance that they had in past periods because the pharmaceutical laboratories started to dominate completely the market of medicines. This period is also characterized by an intense combat and repression of the mysticisms, including the traditional use of plants. All these processes certainly contribute for a lack of interest in the medicinal plant research at that time.

In the 80's, due to influence of the World Health Organization (WHO), plants started to have importance in researches again. As consequence, we can observe that the number of published articles indexed in the PLANT-Database in decade of 1990 reached the same number as in decade of 1940. Fourteen periodicals describe results of studies about medicinal plants in 1990, including the "*Revista Brasileira de Farmacognosia*" (Brazilian Journal of Pharmacognosy) specific for studies on medicinal plants.

We believe that data about native species present in PLANT - Database are very important and can they really to contribute for improving research on medicinal plants in Brazil, as well as the elaboration of Monographs for Official Pharmacopoeia. The PLANT-Database is available and it can be freely accessed by request through email: bibfar@farmacia.ufmg.br.

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