

Information services and products for Phytomedicine and Ethno-veterinary medicine: supporting new research niche areas in Africa

Tertia Coetsee and Marguerite Nel

Jotello F. Soga Library, Faculty of Veterinary Science, University of Pretoria, South Africa

ABSTRACT

Early in 2006 a new four year faculty plan was developed for the Faculty of Veterinary Science, University of Pretoria. The emphasis was on postgraduate training, stimulating research on unique problems and the development of national and international relationships. Five "National Research Foundation Developed Research Niche Areas" were identified of which "Phytomedicine and ethno-veterinary medicine" was one.

This programme focuses on the development of extracts from South African plants with antimicrobial or anti-parasitic activity for use in animal production.

This paper will focus on the role of the Veterinary Science Library of the University of Pretoria to promote information services to support research in this discipline. It will illustrate how the information specialist can become closely aligned with the faculty department, to support education innovation and research excellence.

In order to provide resources for current research in phytomedicine and ethno-veterinary medicine, the information collection of the Library was evaluated against other national and international university libraries' collections.

As many of the postgraduate students are situated off campus, often outside South Africa, the focus is on electronic information products and services for easier retrieval of information, group interaction, information sharing and collaboration and the digital preservation of intellectual products of the Phytomedicine Programme. A webpage and a digitized slide collection with optimum accessibility provided by metadata, are part of information support.

The important role of the information specialist in ensuring the development of relevant information services and products to support research in a new and dynamic subject field, with significance for Africa, is illustrated.

1. Introduction

In an article on the role of academic libraries in the global information society, Shuler (2007: 713) remarked as follows regarding academic libraries: "...they are not publishers, but they do preserve the functions and purposes of publishers. They are not consumers of information, but they do sustain a culture of deliberative information consumption...they are not the research and teaching embraced by the academy, but without their bibliographic traditions, scholarly discovery, learning, and teaching would be isolated, episodic, and limited to the hash economy of the subject or topic attracting the greatest money or the best students. Ultimately, the purpose of any library is to preserve a global intellectual connective tissue that usefully binds the subjects of all books, articles, reports and myriad other published and unpublished sources of knowledge."

At the Jotello F Soga Library of the Faculty of Veterinary Science, University of Pretoria, the past years have seen the development of a group of web products geared to the needs of its student and researcher/lecturer market. These e-information products (web portals, digitised collections and self-generated electronic publications) are also relevant for the rest of Africa, especially in the SADC (Southern African Development Community) region where the faculty plays a leading role in veterinary education and research.

The Jotello F Soga Library has 3 information specialists (each supporting specific departments) to assist students and staff with information literacy training, and specialised information searches. These information specialists are also responsible for the acquisition of relevant information resources (journals, books, reference sources, audiovisual sources, and e-resources) for the library. They also undertake to add value, to promote information services to support research in each discipline and to support education innovation and research excellence.

The information specialist for the Department of Paraclinical Sciences became involved with the Phytomedicine section's information needs as this postgraduate programme developed. Information support included building an appropriate information sources collection, designing a website to enable easier retrieval of information for postgraduate students from various countries in Africa, and making available online a relevant collection of plant slides predominantly for their use.

This paper will give an overview of services and products provided by the Jotello F Soga Library to support information needs of researchers and post graduate students involved in the Phytomedicine programme. A collection evaluation of information resources on this subject will also be discussed.

2. The Phytomedicine Programme of the University of Pretoria

According to the Phytomedicine programme website, infections, whether in humans, animals or plants, cause massive problems worldwide and especially in developing countries. For thousands of years man has been using plants for protection against various diseases. Plants are efficient in developing chemical control agents for various pathogens and a significant part of pharmaceutical medicine is based on compounds isolated from plants. In developing countries 80% of the people depend on medicinal plants for primary health care. The herbal medicine industry is growing strongly in the developed and developing world.

Southern Africa has 10% of the world's higher plant species diversity, but this resource has been under-examined compared to plants in many other areas.

The Phytomedicine Programme is a multidisciplinary and collaborative research programme investigating therapeutically useful compounds present in plants growing in South Africa. The programme was started in 1995 in the Department of Pharmacology, Medical Faculty of the University of Pretoria by Prof J N Eloff. It was transferred to the Department of Paraclinical Sciences, Faculty of Veterinary Science, University of Pretoria, in 2002. In 2007 it was designated as a National Research Foundation Developed Research Niche Area.

The phytomedicine laboratory expertise is in extraction, bioassay and isolation of bioactive compounds from plants. They further have the capacity and facilities to undertake specific pharmacological and toxicological testing. They co-operate with many specialists in other areas in the application of extracts and isolated compounds to improve the health and productivity of plants, animals and humans. They focus on species that can be of value in infective diseases because this is a major need in developing countries.

The programme investigates problems in the wide area of infections, especially microbial and parasitic infections in the process of training postgraduate students

Therefore they are not satisfied only in isolating and testing bioactive compounds, but are also interested in following up on aspects such as toxicology, pharmacology, testing activity in animals, mechanism of activity, industrial application and enabling rural use.

The approach is multidisciplinary and students and collaborators come from diverse fields such as biochemistry, botany, chemistry, microbiology, parasitology, pharmacy, pharmacology, physiology, plant pathology, plant production, veterinary sciences and zoology.

Their clients are students, scientific collaborators, industry involved in phytomedicine and users or potential users of phytomedicines.

2.1 Phytomedicine vs Ethno-veterinary medicine

The Free Medical dictionary (2009) defines Phytomedicine as the term describing the use of plants, parts of plants, and isolated phytochemicals for the prevention and treatment of various health concerns. It includes the preparation of a medicinal herb; and the use of natural plant substances to treat illness.

Ethnoveterinary medicine refers to people's knowledge, skills, techniques and cultural beliefs and both animal and human resources in order to implement appropriate medical action about the care of their animals (Martin et al, 2001:8). McGaw et al. mention that "*Ethnoveterinary medicine is important in areas of developing countries that lack access to conventional medicines for animal health care, which are often unaffordable to poor rural farmers.*" This is one of the reasons why "*...the market in traditional medicines is expanding, and traditional practices are increasingly becoming mainstream*", (McGaw et al. 2007: 366).

3. Information Support

The following products and services are provided by the Jotello F Library:

- Building an appropriate information sources collection, both paper and e-publications.
- Benchmarking with other Institutions
- Creating and maintaining a special webpage for the Programme
- Providing optimum access to relevant e-resources
- Digitising slides of important plants

- Electronic publishing of the Programme's Proceedings

The following section will discuss some of these services and products.

3.1 Webpage (Phytomedicine in Africa)

A unique webpage was designed to focus on important African ethnoveterinary plants with links and content provided to support the research programme.

(www.library.up.ac.za/vet/phytomedicine)

As many of the postgraduate students are situated off campus, often outside South Africa, the focus is on electronic information products and services for easier retrieval of information, group interaction, information sharing and collaboration and the digital preservation of intellectual products of the Phytomedicine Programme. A webpage and a digitized slide collection with optimum accessibility provided by metadata, are part of information support.

In collaboration with the head of the Phytomedicine Programme, Prof JN Eloff it was decided to include in the webpage the plants on Lists A and B of the Centurion Declaration of the Association for African Medicinal Plants Standards (AAMPS). These 51 plants form part of the most important medicinal plants of Africa. The website includes: description of the plant, parts used, medicinal uses, preparation and dosage, active ingredients, pharmacological effects and the distribution of the plant and a bibliography. It is planned to later include the pharmacopoeia of each plant.

3.2 Groundbreaking articles

To increase the impact and relevancy of the webpage, it was decided to give access to groundbreaking articles from the site. Copyright permission has to be obtained before the articles may be digitized and uploaded.

These articles are mandatory reading for all postgraduate students in preparation for their research at the Phytomedicine Department.

3.3 Published research output

A bibliographic list of the research output of personnel at the Phytomedicine Programme appears on the Webpage. Links are made to the full text versions on OpenUP which forms part of the University's institutional research repository, UPSpace.

UPSpace is the institutional digital repository where intellectual output (articles, newspaper articles, TV and radio interviews, etc) of UP Faculty staff and postgraduate students is archived in electronic format. Fulltext articles published in accredited journals are placed in UPSpace as part of the OpenUP collection.

According to the University of Pretoria Library Service's webpage, the OpenUP Collection consists of scholarly publications (postprints) by researchers of the University of Pretoria. It is linked to the Research Information System and complements the Annual Research Report. Most of the articles authored by staff or students of the Phytomedicine Programme since 2007 are available in

OpenUP. <https://www.up.ac.za/dspace/handle/2263/76>

3.4 E- Resources

E-resources available to students and researchers in the Phytomedicine Programme include e-databases such as CAB Direct, Medline, Embase via DIALOG, Martindale, Pharmacopoeia, Scopus and Science Direct. They are available to all students, on and off campus. <http://www.library.up.ac.za/eresources/eresourcesaz.htm>

Masters and Doctoral students' research information will also be placed on UPSpace. This includes non-published information that they are still working on. Access to this information will be controlled, as some information is confidential, or there are patent rights involved. In this way postgraduate students will be able to see who else is working on similar fields of research, thereby leading to collaboration and enhancing their research output.

E-books on ethnoveterinary and phytomedicinal topics are available in the library collection and can be accessed via the Library Catalogue by staff and students. <http://www.library.up.ac.za/ebooks/collmain.htm>

E-theses are available online via UPeTD, the University of Pretoria's electronic theses and dissertations collection. It forms part of the eScholarship initiative of the Department of Library Services. <http://upetd.up.ac.za/UPeTD.htm>

It is compulsory for all Postgraduate students to submit their theses and dissertations to UPeTD.

3.5 Digitised Slide Collection

A digitized slide collection with optimum accessibility provided by metadata, is part of information support. In partnership with the section Pharmacology and Toxicology, Department of Paraclinical Sciences a selection of slides are being identified, with descriptions by their subject experts, to be digitized and uploaded with appropriate metadata. The aim of the project is to ensure the preservation of the information. With funding granted by the Department of Education Innovation, student assistants have been appointed to upload these learning objects.

It is important to note that slides which are uploaded in the UPSpace repository must be University of Pretoria property, or not under copyright. Photos which appear in books, for example, may not be used in this collection, unless copyright permission has been granted by the publisher.

Each collection has a collection administrator, submitter, reviewer/s and metadata editor.

3.6 Publishing Proceedings

Proceedings of conferences and workshops presented by the Phytomedicine Department are also placed in UPSpace. The proceedings of the workshop held March 2008 will appear there soon.

4. Library Collection development

The University of Pretoria Libraries "...strives to be leaders in providing world-class solutions to information and knowledge challenges for achieving academic excellence"

(University of Pretoria: 2009). Therefore the provision of efficient, relevant and recent information resources to support information needs of researchers is critical. In a global straitened economic climate, the challenge for library collection development, however, is to provide more with less. For this reason a critical analysis and evaluation of the existing collection is important in order to plan and develop future acquisitions and developments for the Phytomedicine collection.

The following section will focus on the evaluation of information resources available at the Jotello F Soga Library of the University of Pretoria in the Phytomedicine discipline. It will give a brief overview on what sources are available worldwide in this field, and continue with benchmarking a few selected titles with two other South African university libraries, and one US university library as well as one UK university library.

The study will then focus on a few journals in which researchers prefer publishing.

4.1 Information resources on OCLC Worldcat

When searching for controlled vocabulary for the term "*Phytomedicine*", a Library of Congress subject search on Classweb, suggests the use of the terms "*medicinal plants*" or "*Materia medica, Vegetable*", in the case where it refers to the therapeutic use. For uniformity reasons, it was then decided to use only the subject term "*medicinal plants*" for searches done for the purpose of this study.

Ethnoveterinary medicine, was defined earlier in this paper. OCLC Library of Congress Subject Headings suggests the use of the subject "*traditional medicine*" for this term. Figure 1 illustrates the subject searches for both terms.

<p>LC Subject Search: Structured subject heading: Medicinal plants (May Subd Geog) [R S D] [QK99 (Botany)] [B L S D] [SB293-295 (Culture)] [B L S D] Here are entered works on the description and/or the cultivation of medicinal plants. Works on the discipline of medical botany are entered under Botany, Medical. UF Drug plants BT <u>Plants, Useful</u> RT <u>Botanical drug industry</u> <u>Botany, Medical</u> <u>Materia medica, Vegetable</u> <u>Psychotropic plants</u> NT <u>Cephaelis ipecacuanha</u> [R] <u>Helenium mexicanum</u> [R] <u>Herbals</u> [R] <u>Jatropha gossypifolia</u> [R] <u>Manna plants</u> [R] <u>Opium poppy</u> [R] Medicinal plants--Therapeutic use USE <u>Materia medica, Vegetable</u> [R]</p>	<p>Ethnoveterinary medicine USE Traditional veterinary medicine Traditional veterinary medicine (May Subd Geog) [R S D] UF Ethnoveterinary medicine Folk animal medicine Folk veterinary medicine Indigenous veterinary medicine Traditional animal medicine Traditional livestock medicine BT <u>Traditional medicine</u> <u>Veterinary medicine</u></p>
--	--

Figure 1: Subject search for "Phytomedicine" and "Ethnoveterinary medicine" on LCSH (Classweb)

A further search on OCLC Connexion WorldCat was done with the aim to provide more information on what has been published recently on the subject "*Medicinal Plants*". Table 1 illustrates the amount of information resources added over the period 2007 - March 2009 on OCLC Worldcat. From this data, it is clear that there was a decrease in books published on this subject during this period. There was however already four computer files added during the first part of 2009. This phenomenon may illustrate the movement to electronic publishing.

Format	2007	2008	2009 (Jan - Mar)
Books	274	162	35
Textual Serials	1	1	0
Visual Materials	7	3	0
Computer Files	2	1	4

Table 1: Information resources on OCLC Worldcat 2007 - Mar 2009

Regarding serials, 96 titles were added in the OCLC Worldcat catalogue before 1995, while 38 journal titles were added during the period 1996 - 2008. Of these titles, 53 have web access.

When analysing the theses or dissertation collections with subject heading "*Medicinal Plants*" on OCLC Worldcat, one may get a brief overview on research interests in this discipline over the past years. These data are illustrated in table 2. It is clear that an increased interest in this subject field developed during the late 1980's and 1990's, while more and more research was done in the following years. Data from table 2 are graphical illustrated in figure 2.

Dates	Amount
1680 - 1987	98
1988 - 1996	100
1997 - 2000	90
2001 - 2003	81
2004 - 2005	73
2006 - 2008	88

Table 2: Theses / dissertations on the subject heading "*Medicinal Plants*" on OCLC WorldCat

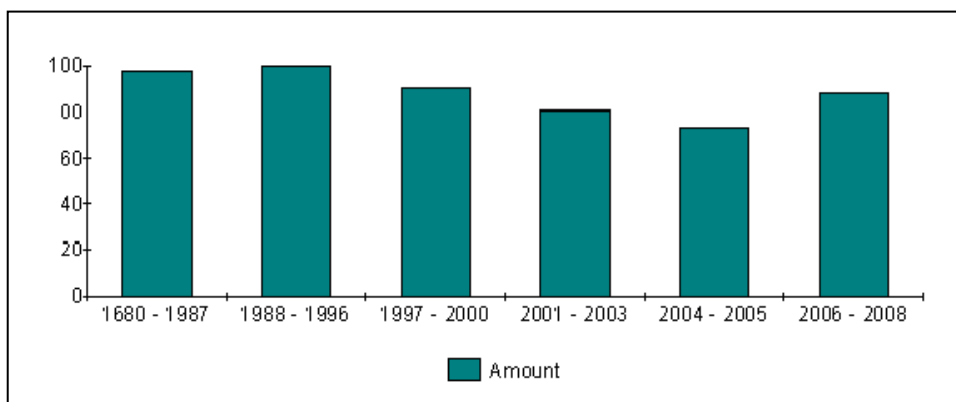


Figure 2: Graphical illustration of theses / dissertation titles added on OCLC Worldcat

With the above information in mind, the next step will be to identify a few relevant information resources in the field of "*Phytomedicine*", and use it as measurement tool for evaluation of the Jotello F Soga Library collection against other national and international academic library collections.

4.2 Evaluating the monograph collection

Nielsen Book Data Online and Blackwell's Collection Manager were used to compile a list of relevant recent titles available on "*Phytomedicine*" and "*Ethnoveterinary medicine*".

The following University Libraries were then randomly selected in order to compare their library collections with the University of Pretoria's (UP) library collection for the availability of selected titles:

- University of the Witwatersrand (WITS), South Africa
- University of Cape Town (UCT), South Africa
- University of Illinois at Chicago (UIC), United States of America
- University of Edinburgh (UE), United Kingdom

Table 3 shows the availability of selected titles in the different library catalogues.

Title	Bibliographic Information	UP	WITS	UCT	UIC	UE
Modern Phytomedicine	Ahmad Iqbal Ahmad, Farrukh Aqil, Mohammad Owais ISBN10: 3527315306 ISBN13: 9783527315307 Publisher: John Wiley & Sons (10 Oct 2006)	Yes	No	No	No	No
Naturally Occurring Bioactive Compounds	Rai, Mahendra Carpinella, Maria Cecilia ISBN10: 0444522417 ISBN13: 9780444522412 Publisher: Elsevier Science (1 Sep 2006)	No	Yes	No	Yes	No
Lead Molecules from Natural Products: Discovery and New Trends	Khan, Mahmud Tareq Hassan Ather, Arjumand ISBN10: 0444516190 ISBN13: 9780444516190 Publisher: Elsevier Science (01 Aug 2006)	No	No	No	Yes	No
Tyler's Herbs of Choice: The Therapeutic Use of Phytomedicinals	Awang, Dennis V C ISBN10: 0789028093 ISBN13: 9780789028099 Publisher: CRC Press (01 May 2009) Edition: 3	Yes	No	No	Yes	No
Herbal Radiomodulators	R Arora ISBN10: 1845933958 ISBN13: 9781845933951 Publisher: CABI Publishing (01 Aug 2008)	No	No	No	No	No
Ethnomedicine and Drug Discovery	Iwu, Maurice M Wootton, Jacqueline M M Iwu, J Wootton ISBN10: 044450852X ISBN13: 9780444508522 Publisher: Elsevier Science (31 Jan 2002) Edition: illustrated edition	Yes	No	No	Yes	No
Handbook of Medicinal Plants	Yaniv, Zohara Zohara Yaniv, Uriel Bacharach Paperback: ISBN10: 1560229950 ISBN13: 9781560229957 Hardback: ISBN10: 1560229942 ISBN13: 9781560229940 Publisher: Taylor & Francis (01 Jan 2005) Edition: illustrated edition	Yes	Yes	Yes	Yes	No
Veterinary Herbal Medicine	Wynn, Susan G Fougere, Barbara J ISBN10: 0323029981 ISBN13: 9780323029988 Publisher: C.V. Mosby Elsevier Health (01 Dec 2006)	Yes	No	No	Yes	Yes

	Edition: illustrated edition					
Ethnoveterinary Research and Development	Constance M McCorkle, etc , et al ISBN10: 1853393266 ISBN13: 9781853393266 Publisher: ITDG Publishing (01 Jan 1996) Edition: illustrated edition	Yes	No	No	No	No

Table 3: Evaluation of selected titles for Phytomedicine and Ethnoveterinary medicine in selected library catalogues

Results from table 3 shows that the University of Pretoria and the University of Illinois at Chicago, both owns six of the nine selected titles. The University of the Witwatersrand Library owns two of the listed titles, while the University of Edinburgh and the University of Cape Town both have only one of the selected titles in their catalogues. These results are illustrated in figure 3.

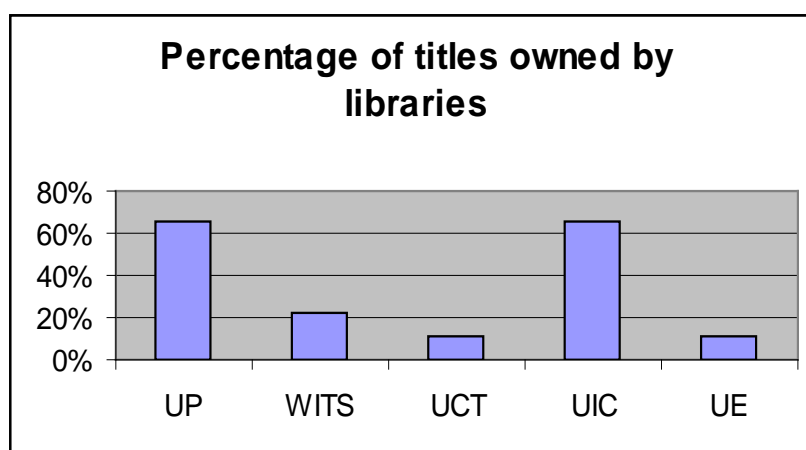


Figure 3: Graphical illustration of percentage (%) of titles owned by the selected libraries

This benchmarking exercise illustrates that the Jotello F Soga Library collection holds relevant, recent and comprehensive monograph titles on the subject of “phytomedicine” and “ethnoveterinary medicine”.

4.3 Journals

There are a few journal titles in the disciplines, “phytomedicine” and “ethnoveterinary medicine”. Due to the fact that most journals are electronically available and can be accessed through several vendor platforms and databases as well as the fact that a number of scientific journals are open access, this study will rather try to identify a few journal titles, in which researchers from the Phytomedicine department of the University of Pretoria prefer to publish. Their relevance as well as whether they are the most appropriate regarding impact factors will then be evaluated.

A list of peer reviewed publications by researchers from the department of Phytomedicine since the starting of the programme is available at the following web address: <http://web.up.ac.za/default.asp?ipkCategoryID=3603&subid=3603&ipklookid=13>

Tabel 4 was compiled in order to calculate the amount of publications in the different journal titles. From this table the *Journal of Ethnopharmacology* contains the most publications of the department of Phytomedicine. *South African Journal of Botany* is in the second place with only one less publication, while the *South African Journal of Science* is the third most preferred publication.

All three these titles are available in the University of Pretoria Library Catalogue as print subscriptions as well as with electronic access.

Journal title	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
Journal of Ethnopharmacology	2	1	0	2	0	0	1	1	0	2	5	14
South African Journal of Botany	1	0	0	0	2	1	2	1	0	3	3	13
Planta Medica	1	0	0	0	0	0	0	0	0	0	0	1
Monographs in Systematic Botany from the Missouri Botanical Garden	1	0	0	0	0	0	0	0	0	0	0	1
South African Journal of Science	0	1	1	1	0	1	0	0	1	1	0	6
Cancer Letters	0	0	1	0	0	0	0	0	0	0	0	1
SA Tydskrif vir Natuurwetenskap en Tegnologie	0	0	1	0	0	0	0	0	0	0	0	1
Journal of Economic Botany	0	0	0	0	1	0	0	0	0	0	0	1
Phytomedicine	0	0	0	0	0	0	1	0	0	0	1	2
Pharmaceutical Biology	0	0	0	0	0	0	1	0	0	0	1	2
Onderstepoort Journal of Veterinary Research	0	0	0	0	0	0	0	1	0	0	1	2
Journal of the SA Veterinary Association	0	0	0	0	0	0	0	2	0	0	0	2
African Journal of Biotechnology	0	0	0	0	0	0	0	3	1	1	0	5
Phytotherapy Research	0	0	0	0	0	0	0	1	0	0	0	1
Veterinary Parasitology	0	0	0	0	0	0	0	1	1	0	1	3
International Journal of Pharmacology,	0	0	0	0	0	0	0	0	1	0	0	1
African Journal of Traditional, Complementary and Alternative medicines	0	0	0	0	0	0	0	0	2	1	0	3
Journal of Animal and Veterinary Advances	0	0	0	0	0	0	0	0	1	0	1	2
The Veterinary Journal	0	0	0	0	0	0	0	0	0	1	0	1
Arkivoc	0	0	0	0	0	0	0	0	0	1	0	1
Natural Product Research	0	0	0	0	0	0	0	0	0	1	1	2

Journal of Tropical Medicinal Plants	0	0	0	0	0	0	0	0	0	0	1	0	1
Biological and Pharmaceutical Bulletin	0	0	0	0	0	0	0	0	0	0	0	1	1
British Society for Animal Science	0	0	0	0	0	0	0	0	0	0	0	1	1

Table 4: Peer reviewed publications of the Department Phytomedicine, 1998 – 2008

The databases JCR Science Edition 2007 and Scopus were used to obtain valuable information regarding the citation rates of the three most used journals by researchers in the Phytomedicine department of the University of Pretoria. The following measurements were used: the impact factor; the immediacy index, the cited half-life and the Eigenfactor.

According to Rossner et al (2007: 1091), the impact factor of a journal in a particular year, is “...a measure of the average number of times a paper published in the previous two years was cited during the year in question.” Immediacy index refers to the number of citations the articles in a journal receive in a specific year divided by the number of articles published in that journal.

Thomson Reuters (2008) defines the citing half-life of a journal as the median age of articles cited by the journal in the JCR year and add that only journals that publish 100 or more cited references have a citing half-life.

The *Eigenfactor* Score measures the number of times articles from a journal published in the past five years have been cited in the JCR year. According to Thomson Reuters (2008), the *Eigenfactor* Score is essentially a ratio of number of citations to total number of articles. Bergstrom (2007) mentions that the Eigenfactor “...measures the total influence of a journal on the scholarly literature or, comparably, the total value provided by all of the articles published in that journal in a year.”

According to the Journal of Citation Reports Science edition 2007, *Cancer Journal for Clinicians* is the journal with the highest impact factor as well as immediacy index. The journal *Progress in Experimental Tumor Research* has the highest cited half-life, while *Cancer Research* has shown the highest *Eigenfactor* score. It is interesting that all these journals are in the discipline of cancer research, and it will be unfair to measure the selected Phytomedicine journals with these highly ranked medical journals. The relevant data of the three Phytomedicine journals are illustrated in table 5.

Journal title	Impact factor	Immediacy Index	Cited Half-life	Eigenfactor Score
Journal of Ethnopharmacology	2.049	0.251	6.1	0.01809
South African Journal of Botany	0.444	0.224	7.5	0.00156
South African Journal of Science	0.670	0.074	9.0	0.00392

Table 5: JCR Science edition 2007 citation rates data

According to the given data from table 5, *Journal of Ethnopharmacology* has the highest impact factor as well as Eigenfactor score, compared to the other two journals. High cited half-lives scores are however visible at the two South African journals.

All the mentioned journals appear on the ISI list of accredited journals and are peer reviewed, highly rated and relevant for researchers in the Phytomedicine discipline to publish in.

Another journal title, *Phytomedicine : international journal of phytotherapy and phytopharmacology*, can also be recommended to researchers of this department. It has an impact factor of 1.817, an immediacy index of 0.348 and cited half-life of 5.0.

4.4 Interpretation of the benchmarking results

In order to ensure that the library provides a relevant, accountable and reliable collection, it is necessary to position it against other national and international academic libraries. It was therefore necessary to evaluate the existing collection. Interesting data regarding journals was also overviewed. As Rossner et al (2007: 1091) state: "*The integrity of data and the transparency about their acquisition are vital to science.*"

The above study highlighted the fact that although the Phytomedicine discipline is a rather new field of research in the academic environment, the need exists for supporting libraries to develop information resource collections in order to support research in this field.

The monograph collection of the Jotello F Soga Library was evaluated against two other national library collections as well as two well known international university library collections. The study indicated an appropriate information resources collection for Phytomedicine in the University of Pretoria's Jotello F Soga library. Although one may suggest the use of Interlending to support user's needs for information resources, it may not always be cost effective, possible or reliable. These results may also be used to support motivation for further collection development in this discipline.

5. Conclusion

The Phytomedicine programme as well as services and products of the Jotello F Soga Library have been discussed. It is clear that the information specialist and the library play an important role in enhancing research output of the Phytomedicine programme. To ensure a relevant, accountable and reliable collection for this discipline, cooperation between the department, information specialist and the collection development librarian is essential in order to facilitate education innovation and research excellence.

REFERENCES

Blackwell Collection Manager. [Online]. <http://www.blackwell.com/> [7 April 2009].

"Eigenfactor," American Library Association, May 14, 2007.[Online]. <http://www.ala.org/ala/mgrps/divs/acrl/publications/crlnews/2007/may/eigenfactor.cfm> [29 April 2009].

Martin, M., Mathias, E & McCorkle, C.M. 2001. Ethnoveterinary medicine: an annotated bibliography of community animal healthcare, London: ITDG Publishing.

McGaw, L.J., Van der Merwe, D & Eloff, J.N. 2007. In vitro anthelmintic, antibacterial and cytotoxic effects of extracts from plants used in South African ethnoveterinary medicine, *The Veterinary Journal*, vol. 173, no. 2, pp. 366-372.

Nielsen BookData Online. [Online]. <http://www.Nielsenbookdataonline.com> [7 April 2009].

Rossner, M., Van Epps, H. & Hill, E. 2007. Show me the data. *Journal of Cell Biology*, Dec 2007; vol. 179 pp. 1091-1092.

Shuler, J. 2007. Academic Libraries and the Global Information Society. *Journal of Academic Librarianship*. Vol. 33(6) pp. 710 – 713.

Phytomedicine. 2009. The Free Dictionary [Online] <http://medical-dictionary.thefreedictionary.com/phytomedicine> [8 April 2009]

Thomson Reuters (2008) Journal of Citation Reports Science edition 2007 [Online] <http://www.isiknowledge.com> [28 April 2009]

University of Pretoria. Department of Library Services: Strategic plan: 2006 - 2010. [Online]. <http://www.ais.up.ac.za/aisintranet/manage.htm> [30 April 2009].

University of Pretoria. Department of Library Services: UPSpace Research Repository of the University of Pretoria, South Africa . [Online]. <https://www.up.ac.za/dspace/> [30 April 2009].

University of Pretoria. Department of Library Services: University of Pretoria Electronic Theses and Dissertations. [Online]. <http://upetd.up.ac.za/UPeTD.htm> [30 April 2009].

University of Pretoria. Department of Paraclinical Sciences, Faculty of Veterinary Science. Phytomedicine Programme. [Online] <http://web.up.ac.za/default.asp?ipkCategoryID=3593&subid=3593&ipklookid=13&parentid> [7 April 2009].