

Open access journals, magazines and other information sources for scholarly literature in pharmaceutical education, research and pharmacy practice

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Abstract

The open access (OA) to scholarly articles published in journals, magazines and other literature sources is extremely useful to pharmacy students, teachers, research scholars, scientists and pharmacists to update their knowledge with recent changes in their fields of specialization. Open access (OA) to scholarly articles is provided either directly from journal homepages by the publishers or from repositories where publishers submit these articles to promote OA. Apart from these online repositories for thesis, online resources trials, sample copies of journals, free back files, author funded OA of individual articles are other important online resources for information retrieval. International organizations have also started initiatives to provide free or low cost access to online journals in developing countries. Searching internet for information requirements in specialized disciplines is becoming easier with the advancement of search engines through specialized and custom search engine facilities. Authors searched Internet with the help of various general purpose search engines, like google, yahoo, and live search, to find out URLs of websites of journals, magazines, science and technology publishers, pharmaceutical societies, and online repositories which provide open access to scholarly articles and other useful and authentic drug information in pharmacy and pharmaceutical sciences disciplines. Authors visited all these websites to confirm their free accessibility and their free contents available. Thereafter these journals, magazines and other literature sources are segregated according to their specialization and provided in this article. Open access journal full text links have been provided for 235 journals and 49 magazines in disciplines of pharmaceutics, pharmacology, toxicology, physiology, clinical pharmacy, epidemiology, chemistry, pharmacognosy, microbiology, biotechnology, bioinformatics and multidisciplinary pharmaceutical sciences. Websites for online drug information resources, and repositories which provide full text thesis have also been compiled. This article reviews most OA resources with special reference to the disciplines of pharmacy and pharmaceutical sciences.

Keywords: Open access; Free access; Information retrieval; Pharmaceutical sciences; Pharmacy; Internet

INTRODUCTION

Electronic publishing have dramatically changed the way most teachers, students and research scholars access literature in pharmaceutical education, research and pharmacy practice. Searching online content is much easier task than the traditional modes of literature collection by visiting library and manual searching. International organizations, scientific communities, societies and publishers are now adopting open access (OA) distri-

bution model for dissemination of scholarly articles and other information. OA is tremendously changing the way such scholarly information is distributed in the form of electronic materials. OA is generally defined as the availability of a published item without charge to the user for the right to read, download, copy, print, or distribute the item (1). Three types of open access has been classified which are unqualified OA, delayed OA and partial OA. The most significant, the most scientifically sound, and the most

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relevant literature to current research work is not only accessed, it is read and retained by adopting OA.

OA provides the benefit of removing financial barrier to download required information provided in journals. Free access to articles provides up-to-date knowledge of new topics, research going through out the world, new products of pharmaceutical companies, new machines and excipients information. Moreover the latest health information in the form of articles are accessible at places where the print publications are not available. Overall benefits to students, teachers, researchers and pharmacists include easy literature collection for seminars, assignments, presentations, research works and thesis.

Global Healthcare Information Network (<http://www.ghi-net.org/campaign/>) aims to achieve access of every person worldwide to an informed healthcare provider by the year 2015. Quality of healthcare delivery could be improved by providing free access to reliable information for healthcare workers and patients. As more patients have become reliant on the computer for information, pharmacists can recommend Internet sites deemed appropriate for a patient desiring additional information regarding a medication. The patient may be eager to participate in his/her healthcare and have a willingness to learn about new medications, or the patient may have seen an advertisement for a new medication and wishes to learn more. In addition, free medication information web sites can reduce costs for the pharmacist plus offer remote access to patient oriented information while away from the pharmacy. Pharmacy students, teachers, research scholars, scientists and practicing pharmacists must know online repositories, drug information sources websites of journals and magazines for updating themselves with the recent changes in their respective fields. Most of the journals and magazines are now providing their contents online. Open access journals are free to access and online subscription (paid journals) charges are usually less than those of print publications. Furthermore, searching the online content through proper keywords has reduced the burden of literature search for various assignments and projects.

This overall change has made more reliance of pharmacy students on use of computer and Internet for searching relevant literature. Websites have provided option of literature searching from the laboratory working bench. Time and cost for literature retrieval for assignments and various projects in education and research have been reducing due to developments in information technology and use of high speed Internet.

Science and technology publishing

Science and technology publishers can be divided into two groups which are not-for-profit publishers and commercial or for-profit publishers. Not-for-profit publishers include learned societies and university presses whose interests are beyond making profit and think that setting the standards and education are the fundamental aims (1). OA publishing is a movement which has been continuously motivated and supported by not-for-profit societies and university presses due to the limited library-funds of institutions; lack of access impedes research; the right to access publicly funded research; and the needs of the developing world.

Science and technology publishing has been dominated by multinational commercial publishers who continuously target their journals for high impact factor so as to attract more and more advertisements from multinational companies at their web sites and even in their print publications. Commercial publishers disseminate scholarly articles through subscription based models and therefore these are not freely available over Internet. These publishers firmly believe that scientific researches will leak in uncontrolled fashion resulting in undifferentiated pool of un-reviewed researches (2). OA movement has encouraged the introduction of new journals, archives and repositories that are considered difficult to sustain. This might affect the functioning of existing peer-reviewed journals and may simultaneously force their closure. Therefore, commercial publishers saw OA as a challenge to combat and started hybrid models of OA and closed access (subscription based) which serve potentially viable compromises. Author's pay model, self archiving and devel-

opening world access through HINARI are well supported by commercial publishers. These hybrid systems are considered by commercial publishers as a balanced system which combines the benefits of OA as well as peer-review process.

The debate between commercial publishers and publishers supporting OA is ongoing. This debate has resulted in benefit for education and research as commercial publishers are also embracing OA and peer-review process has been introduced by most of the OA journals.

Open access publishing

Number of open access journals has tremendously increased in the ISI citation databases and the largest increase has been found in Medicine and Life Sciences category (3). Open Access journals are not necessarily newly introduced journals. Publishers might provide content of few recent years while access may be provided to older content as well through OA. Another avenue for OA exists at the level of individual articles through which author or institutional archiving has been proposed as a more likely path by which the majority of scholarly content can be made freely available to readers worldwide. Free online accessibility of journals increases the impact factor of any journal due to increase in readership and further citations of these articles in other publications (4). Dramatic citation advantages for OA articles have been reported in literature (5). Open access publishing includes various avenues like open access journals, authors' self archiving, funded access, free back files and free or low cost access to developing countries.

Open access journals

Open Access Journals (OAJs) has been defined as "free availability [of scholarly literature] on the public Internet, permitting any user to read, download, copy, distribute, print, search, or link to the full texts of articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself" (6). The trend toward open access journals is growing

stronger day by the day. Thomson study showed that the number of OA journals in their databases has grown to 239 by June 2004 (7). In 2007, under the banner of "Bentham OPEN", Bentham Publishers have launched more than 200 peer-reviewed open access journals. The journals target all major disciplines and are exclusively open access publications.

Online resources to open access journals

Open access journals are accessible from either the publisher's website or from other repositories where publishers have deposited the scholarly articles or through full text links provided at databases. PubMed Central International, BioMed Central, Medscape Pharmacists, Highwire Press, SciELO, Bioline International, J-STAGE, Open J Gate, Free Medical Journals Website, Medknow Publications and MedInd are playing significant roles in this direction. Online OA journals in various disciplines of pharmacy have been compiled in Table 1 (a, b, c, d, e, f, and g).

PubMed Central International

PubMed Central was developed and is operated by the National Center for Biotechnology Information (NCBI), a division of the National Library of Medicine (NLM) at the U.S. National Institutes of Health (NIH). PMC, itself, is not a publisher and began operating in February 2000 with content from two journals: Proceedings of the National Academy of Sciences (PNAS) and Molecular Biology of the Cell. NLM is working with various publishers, whose journal content makes up the PMC archive, and not-for-profit organizations in several countries. PMC and UKPMC are part of a network of PMC International (PMCI) repositories. UKPMC is funded by governmental and charitable research institutions in the United Kingdom for its maintenance and ongoing development. PMC and UKPMC also provide options of storing data of research in the form of reports from diverse sources in a common format in a single repository as per NIH Public Access Policy and Wellcome Trust Open Access Policy. PMC in collaboration with Blackwell Publishing's Open Access Programme, Oxford

Journals' Oxford Open and Springer's Open Choice provides open access articles whose access has been funded by their authors or research institutions.

PubMed HINARI version

Special version of PubMed (Medline) has been devised for searching and access full-text articles (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?mynbshare=hinari_who). Searching through this version leads to results in the forms of citations of articles with option of viewing the results in the form of citations of "all", "full text" and articles available through "HINARI". Bibliographic information and full text articles could be accessed globally. On the other hand the results shown for "HINARI" are accessible in full text form only after providing suitable login information in developing countries. HINARI link button has been provided when the selected citation is viewed as abstract.

BioMed Central

BioMed Central (<http://www.biomedcentral.com>) is an independent publishing house committed to providing immediate open access to peer-reviewed biomedical research. All original research articles published by BioMed Central are made freely and permanently accessible online immediately upon publication to ensure the rapid and efficient communication of research findings. Article-processing charges (APCs) cover the cost of the publication process to allow free and immediate access to the research articles

Medscape pharmacists

This website (www.medscape.com) provides good information source for practicing pharmacists. News, continuing education, conferences, resource centers, journals and references, experts and viewpoints have been provided in a good accessible manner. The information provided is completely free of cost. Journals and references section on the website provide selected articles from various journals which are free to access through this website.

Highwire Press

A division of the Stanford University Libraries, HighWire Press (<http://highwire.org/>) hosts the largest repository of high impact, peer-reviewed content, with 1066 journals from over 130 scholarly publishers. The website provides quick searching facilities and the results provide full text links at publisher's website. HighWire Press, on 13/10/07, is assisting in the online publication of 1,803,243 free full-text articles and 4,471,332 total articles. There are 9 sites with free trial periods, and 44 completely free sites. 247 sites have free back issues, and 976 sites have pay per view.

SciELO

The Scientific Electronic Library Online (SciELO; <http://www.scielo.br/scielo.php>) is an electronic library covering a selected collection of Brazilian scientific journals. SciELO was developed by the Fundação de Amparo à Pesquisa do Estado de São Paulo, in partnership with BIREME - the Latin American and Caribbean Center on Health Sciences Information. Since 2002, the Project has also been supported by CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico. The Project envisages the development of a common methodology for the preparation, storage, dissemination and evaluation of scientific literature in electronic format.

Bioline International

Bioline International (www.bioline.org.br) is a not-for-profit electronic publishing service committed to providing OA to quality research journals published in developing countries. The service is managed by scientists and librarians. It is a collaborative initiative of the University of Toronto Libraries, Canada (management office), the Reference Center on Environmental Information, Brazil (host computer and software development) and Bioline/UK (liaison). The service has the goal of reducing the South to North knowledge gap. Peer-reviewed publications, from Brazil, Cuba, India, Indonesia, Kenya, South Africa, Uganda, Zimbabwe, are in the following areas: health (tropical medicine, infectious diseases, epidemiology, emerging new diseases), bio-

diversity, the environment, conservation and international development. Most of the journals are available free of charge. This is a unique service by making bioscience information generated in these countries available to the international research community worldwide.

J-Stage and J-East

Japan Science and Technology Information Aggregator, Electronic (J-STAGE; www.jstage.jst.go.jp) was developed by the Japan Science and Technology Agency (JST). With the facilities provided at J-STAGE, Japanese organizations are able to computerize bulletins of academic societies and research papers currently appeared with ease and at low cost through the necessary hardware and software for electronic journal release within JST. Individual web pages of the journals have been provided with facilities of browsing the available issues. Search facilities are available for the whole content as well as individual journals. Archives of older editions of the journals are maintained at separate website (http://www.Journal_archive.jst.go.jp/english/top_en.php). J-EAST (<http://science.links.jp/j-east>) provides access to Japanese science and technology articles which have been translated to English.

Open J-Gate

Open J-Gate (www.openj-gate.com) is an electronic gateway to global journal literature in OA domain which provides seamless access to articles from peer-reviewed journals as well as professional and industrial journals in all fields. Launched in 2006, Open J-Gate is the contribution of Informatics (India) Ltd to promote OA. It is also a database of journal literature, indexed from 4378 OA academic, research and industry journals, with links to full text at Publisher sites. Table of content browsing, easy to use search facilities and publisher's links to OA articles have been provided at the website.

Free Medical Journals

The Free Medical Journals Site (<http://www.freemedicaljournals.com>) was created to promote the free availability of full text medical

journals over the Internet. The website provides web links and web release schedules (free full text) of more than 430 journals sorted alphabetically, specialty or by language. The links could be used to visit the website for finding full text material free of cost. List of new journals and service of informing about new free journals by e-mail are also available at this website.

Medknow Publications

Medknow Publications (<http://www.Medknow.com>) is the largest publisher in India for academic and scientific biomedical journals. Medknow provides immediate free access to the electronic editions of the journals without charging the author or author's institution for submission, processing or publication of the articles and call it 'fee-less-free' model of OA publishing. Most of the journals published by Medknow are archived at multiple places like DOAJ, IndMED and sites such as Bioline International (<http://www.bioline.org.br>), which ensure the long term archiving and accessibility of the published content.

IndMED and MedIND databases

In 1986, National Informatics Centre (NIC) and Indian Council of Medical Research (ICMR) jointly set up the ICMR-NIC Centre for Biomedical Information to assist medical professionals by information retrieval and compilation. Since then, the Centre has been working to cater the information needs of the professionals by providing biomedical information from MEDLARS (Medical Literature Analysis and Retrieval) databases of National Library of Medicine (NLM), other international resources and CD databases. ICMR-NIC Centre for Biomedical information is recognized as 17th International MEDLARS centre as well as Indian MEDLARS Centre. IndMED and medIND databases have been designed and developed by ICMR-NIC Centre for Biomedical Information (Indian MEDLARS Centre or IMC; <http://indmed.nic.in>). IndMED is a bibliographic database of peer-reviewed Indian biomedical literature which covers more than 200 prominent Indian journals from 1985 onwards. IndMED has been designed and developed on similar

format used by NLM's MEDLINE database using Medical Subject Headings (MeSH) for indexing purposes. The database can be searched using simple and advanced search engines and is free text searchable plus keyword searchable. Links to articles have been provided to existing sites. The other database medIND, launched in 2003, is a central resource to provide online access to full-text of 75 Indian biomedical journals from 2000 onwards. Both of these databases are free of cost, accessible from IMCs webpage.

Pharmaceutical industry magazines

Magazines have been published by several publishers with an aim to attract advertising from pharmaceutical industries. Some of the magazines are freely accessible over Internet. Articles in the form of news, correspondence as well as review and research articles are published by these magazines. Table 2 (a, b, c, d, e, f, and g) is a compilation of such magazines which could be accessed freely and contents may be utilized for education and research purposes.

Author self or institutional archiving at repositories

Self-archiving involves depositing a free digital (word or Text or pdf or html) copy of peer-reviewed research article, conference articles as well as theses in the author's own institutional repository or open archive for the purpose of maximizing its accessibility, usage and citation impact. Doria (<https://oa.doria.fi/>), Uppsala University (<http://publications.uu.se/?lang=en>), Diva Portal (www.diva-portal.org/index.xsql?lang=en) provides online repositories where thesis in full text form could be searched for various disciplines including pharmaceutical sciences. Preprints and post prints of the journal articles are usually found in the institutional repositories. Preprints of the journal articles are author manuscripts which are submitted to journals for consideration for publication. Few publishers are allowing posting of preprints (Word or Text file, not a PDF or HTML downloaded from Publisher's Website) on the institution website or other online repositories. The accepted, revised and final manuscript after publication becomes

post-print which is generally available as PDF or HTML on Publisher's website. Journal copyright assignment policies govern the self-archiving their preprints and postprints articles on personal websites or institutional repositories. Policies of various publishers regarding the article preprints and postprints could be found at RoMEO (<http://www.sherpa.ac.uk/romeo.php>) and <http://romeo.eprints.org/> (Archiving policies by journals) which is service of SHERPA (<http://www.sherpa.ac.uk/index.html>). Based on average articles published in the journals of the 2003 *Journal Citation Report*® and publishers listed as Project ROMEO (www.sherpa.ac.uk/romeo.php), it was estimated that publishers now allow over half of all scholarly articles to be archived by their authors but far less than half of all scholarly articles are actually posted to IRs today, often because of lack of awareness and incentive for researchers to do so (8).

SHERPA and OpenDOAR

SHERPA (Securing a Hybrid Environment for Research Preservation and Access; www.sherpa.ac.uk) was started in 2002 as partnership among research-led universities and other institutions with an aim to develop an open access institutional repository. Partner institutions range from smaller specialized bodies such as School of Oriental and African Studies (SOAS), through to large, diverse Universities like Cambridge and Oxford. The partnership includes the British Library and the Arts and Humanities Development Service with their skills and experience in intellectual property rights, data preservation and collection management. SHERPA developed OpenDOAR (www.opendoar.org) which is world-wide directory of repositories hosting freely available peer-reviewed publications like research papers, conference papers, theses and other academic materials.

OpenDOAR started in 2006 as a joint collaboration between the University of Nottingham in the UK and Lund University in Sweden. Both institutions are active in open access initiatives. OpenDOAR is jointly funded by four agencies, led by the international Open Society Institute (OSI). The UK higher education funding committee, JISC (Joint

Information Systems Committee) provided support, along with funding from the UK-based Consortium of Research Libraries (CURL) and from SPARC European alliance of European research libraries, library organizations, and research institutions. JULIET is a listing of funding bodies' policies regarding deposit mandates and RoMEO is listing publishers' copyright policies in relation to articles deposit. SHERPA has been awarded the SPARC (Scholarly Publishing and Academic Resources Coalition) Europe Award for Outstanding Achievements in Scholarly Communication in recognition of "*their outstanding contribution to Open Access in general and specifically as advocates for the adoption of institutional repositories and for their development of a suite of online tools in support of Open Access, including OpenDOAR, JULIET and RoMEO*". SHERPA has also started a trial search service for the full-text of material held in UK open access repositories. The service utilizes Google Custom Search Engine, which allows SHERPA to define a search service based on all UK repository contents.

Open MED@NIC

Open MED@NIC is an open access international electronic repository and archive of biomedical literature designed by Indian MEDLARS Centre using E-Prints software. Authors can self-archive their peer-reviewed scientific and technical documents having relevance to research in medical and allied sciences including biomedical, medical informatics, dental, nursing and pharmaceutical sciences. Authors/owners are required to register once in order to obtain a user ID in OpenMED system. Searching the archive or viewing the documents does not require any registration or log in. The website also provides options of searching the content by simple and advanced manner.

Author sponsored or funded open access for individual articles

Authors can sponsor non-subscriber access to articles on Publisher's website, or author archiving, where authors can archive their final manuscripts to their institution's reposi-

tory or other website. Elsevier permits open access self-archiving for almost all of its journal titles. An author may post his version of the final paper on his personal Web site and on his institution's Web site (including its institutional repository). Each posting should include the article's citation and a link to the journal's home page (or the article's doi)." The author does not need permission to do this, but any other posting (e.g., to a repository elsewhere) would require permission. The author is also provided by option of updating his version to reflect changes made during the refereeing and editing process. (http://www.elsevier.com/wps/find/intro.cws_home/access_dissemination).

Similarly Blackwell Publishing (<http://www.blackwellpublishing.com>) are offering a new service called Online Open which gives authors the choice to pay a publication fee in order for their article to be openly accessible to all. For 2007, the Online Open fee for Blackwell Publishing is fixed at US\$2,600, 1950 Euros or £1300 (plus VAT where applicable). "iOpenAccess" of Taylor and Francis provides option to cover medical and bioscience journals from Informa Healthcare. Authors whose manuscripts are accepted for publication in one of these iOpenAccess journals will have the option to make their articles available to all via the Journal's website, and to post to repositories, for a one-off fee of \$3100. List of participating journals is available at (http://www.tandf.co.uk/journals/iopenaccess_journals.asp). Springer (<http://www.springer.com>) operates a program called Springer Open Choice. It offers authors to have their journal articles made available with full open access in exchange for payment of a basic fee ('article processing charge'). If authors choose open access in the Springer Open Choice program, they will not be required to transfer their copyright to Springer. Since costs are involved in every step of the publication process, from peer-review to printing and hosting the final paper on dedicated servers, Springer ask from author, or their institution or funding agency, to pay a fee of US\$3,000 (which can also be invoiced in Euros). The authors of Online Open articles are permitted to post the final, published PDF

of their article on a website, institutional repository or other free public server, immediately on publication.

Free back files or back issues of journals

Several journals offer free access to content after a set time period, or to certain types of material such as review articles. The time period may range from 6 month to 3 year or even more than that after the publication of journal. Access to such offers may be for limited duration or for limited year publications also. One recent offer is from Bentham publisher which is not limited to institution but it is open to the scientific community anywhere in the world. All of Bentham Science's journals published in the year 2000, 2001 and 2002 are available free online in full text PDF form in collaboration with *Ingenta-Connect*. This unique offer was only available in the year 2006 and later extended to year 2007. Royal chemical society (<http://www.rsc.org>) provides open access to all its journals for the years 1999 to 2004.

Free or low cost access to developing countries

Several approaches for providing free or low cost access to online journals exist which include the Health Internetwork Access to Research Initiative (HINARI), Program for the Enhancement of Research Information (PERI; www.inasp.info/peri/) managed by the International Network for the Availability of Scientific Publications (INASP); Electronic Information for Libraries (eIFL; www.eifl.net/); and the Ptolemy Project (<http://www.ptolemy.ca>). Health care information is not distributed equally between developed and developing countries. International programmers like HINARI, PERI etc are reducing this gap (9). Apart from international organizations, BMJ Publishing Group and Highwire Press also offer free access to their journals for users in the developing countries.

HINARI project

The HINARI (<http://www.who-int/hinari>) launched in January 2002, provides free or affordable low cost online access to over 3750 peer-reviewed journals from 100 different

publishers covering medicine, nursing and related health and social sciences to local, not-for-profit institutions in 113 developing countries. More than 70 publishers are currently offering their content in HINARI. It is managed by WHO and in partnership with Yale University Library. Free access is provided to institutions in countries with GNI (Global Network Initiative) per capita below \$1000 are eligible for free access under Band 1. Institutions in countries with GNP per capita between \$1000-\$3000 are kept in Band 2 which allows low cost access only after payment of fee of \$1000 per year / institution. All staff members and students of national universities, research institutes, professional schools (medicine, nursing, pharmacy, public health, and dentistry), teaching hospitals, government offices and national medical libraries are entitled to access to the journals. A special version of Pubmed (Medline) is designed to facilitate searching of these journals. Publishers participating in HINARI have not extended their offer to several countries due to their significant number of subscribing individuals and institutions. Health care professionals in China, India, Indonesia and Pakistan are thus not able to get low cost access benefit of HINARI despite their per capita GNI of less than \$3000 and the project has lost its gloss in these countries (10).

INASP PERI

International Network for the Availability of Scientific Publications (INASP; www.inasp.info) was started in 1996 with an aim to provide cooperation, analysis and advocacy among organizations involved in health information access with particular emphasis on the needs of developing and transitional countries (11). In 2002 INASP undertook a survey of initiatives to make content available within the less developed countries and concluded the willingness or desire by publishers to make their content more visible and more available in the developing world (12). INASP runs PERI to support capacity building in the research sector in developing and emerging countries by strengthening the production, access and dissemination of information and knowledge. The immediate objectives of the

program are to facilitate the acquisition of international and local information and knowledge, improve access to local research through the improved preparation, production and management of local journals, provide awareness or training in the use, evaluation and management of electronic information and communication technologies (ICTs), support problem-solving of regional and local information access and dissemination challenges. The program also delivers access to online journals in science, medicine, social science and the humanities at a reduced price to countries in the developing world. Access is provided directly on publisher's website (e.g. Blackwell Synergy, Royal Society of Chemistry Publishing).

Institutional trials and other temporary offers

Science and technology publishers offer free trials through which institutions may provide free access of journal articles and other publications to their students and other staff by simply providing Internet facilities to them. These offers are provided in a manner that the articles are accessible only from authorized institutional computers. Most of publishers release such offers as a tool for evaluation purpose to promote their services for a limited duration. The downloading limit may be imposed and service may be limited to selected journals. Bentham Science offers academic and corporate institutions a 2-month free online trial to all publishers' 70 titles (<http://www.bentham.org/Trials.htm>). Springer (www.springer.com) is providing unlimited access to Springer's extensive online library of various disciplines *viz.* Chemistry and Materials and pharmacology and toxicology for 60 days.

Other modes to get free access of articles

Online sample copies of online journals and inaugural issues of journals are other avenues to open access of articles. The access is usually limited to one sample issue or the inaugural issue. All online journals provide one online sample copy to judge the quality, level and type of articles provided in journal. The issue provided in this manner is usually of the current year. American chemical society

offers free online access of first issue of all journals. The details of the issues could be obtained at (http://pubs.acs.org/about_sample.html) Articles in the sample copy are free to read and download. These copies could be obtained by visiting the journal home page at publisher website. Inaugural Issues of newly introduced journals by bentham in the year 2007 could be found at (<http://www.bentham.org/Newtitles.htm>).

Online free abstract and reprint requests

Commercial indexing and abstracting products are similar to open databases, because they aggregate citation metadata into a single, searchable database or listing. Abstract of the articles provide brief overview on objective, methodology, results and discussions of the research work. Abstracts of scholarly articles are freely available at PubMed or publisher's websites or other abstracting databases and institutional repositories. Metadata submitted by publishers for abstracting purposes may be used to contact authors. Students and teachers may ask authors reprints of the article through e-mails or by normal post.

Drug information resources

Drug related information has been made available by various online pharmacies, drug regulatory authorities as well as other organizations (Table 3). While utilizing such information one must ensure that these online resources must be certified for correctness of information.

Searching open access scholarly articles in pharmaceutical sciences

Speciality search engines (Table 4) like Google Scholar, Scirus and Chemref provides searching and access to scholarly content. These search engines have made searching of scholarly articles and other scientific literature quite easy and straightforward task. The results provided by these search engines are mixed with closed access contents. OpenDOAR provides a full-text search service using a freely available Google custom search engine (www.google.com/cse) to define searches by the worldwide quality-assured repositories listed by OpenDOAR. Thus the results

obtained are more open access only and more tightly focused than Google or Google Scholar. A single repository may also be searched as full text through general search engines like yahoo, google and live search. The Google Scholar service provides access to contents which have been filtered for "academic" content. This service is still developing beta version and thus opens new scope to search repositories. Similar to google scholar the Elsevier service Scirus searches both closed and open access databases for scientific information.

SHERPA (<http://www.sherpa.ac.uk/index.html>) has developed various open access institutional repositories in a number of research universities to facilitate the rapid and efficient worldwide dissemination of research. It also provides tools and support to both repository administrators and service providers in sharing best practice and improving the quality of the repository infrastructure. The website provides facilities of full text search for SHERPA partner repositories and all UK open access repositories. OpenDOAR (<http://www.openoar.org/>), a SHERPA project, is an authoritative worldwide directory of academic open access repositories. OpenDOAR allows facilities of searching repositories as well as repositories contents. Searching facilities at both SHERPA and OpenDOAR utilizes google custom search engine services.

VIKAS PSOAR (<http://vikaspsoar.blogspot.com>) searches more than 250 websites which includes websites of magazines, journals, online thesis, drug information websites which disseminate their scholarly articles or other contents freely on their websites or other repositories. Scholarly literature in the fields of pharmaceuticals, pharmacognosy, analysis, chemistry, biotechnology, microbiology, bioinformatics, pharmacology, toxicology, pathology, physiology, and multidisciplinary pharmaceutical sciences could be explored on the internet. This newly developed search engine utilizes the custom search engine service of google. The results obtained are open to access and more tightly focused to the filed of pharmaceutical sciences.

CONCLUSIONS

Open access publishing and information technology is dramatically changing the way by which information can be disseminated. Open access journals, funded open access and posting of preprints and post-prints on the institutional repositories have great potential for providing information to students, teachers, scientists, research scholars, pharmacists and other healthcare professionals.

From such attempts we could expect healthcare information for all by 2015. Free or low cost access to healthcare information in developing countries is narrowing down the gap of information between developed and developing countries. Specialty search engines and custom search engines have been developed for assisting information seekers in retrieving scholarly articles. Emerging custom search engines such as OpenDOAR for OA literature retrieval have provided path for discipline oriented search engines like VIKAS PSOAR. These specialty and discipline oriented custom search engines have reduced the burden as well as time for literature retrieval for various projects due to their capabilities of narrowing down literature retrieval to OA scholarly articles.

Table 1 (a): Pharmaceutics journals

S. No.	Journal	URL	Free Access	
			Year	Issues
1	AAPS PharmSciTech	www.aapspharmscitech.org	2000-2007	Vol 1 to Vol 8
2	Acta Pharmaceutica	http://public.carnet.hr/acphee; http://hrcak.srce.hr/index.php?show=casopis&id_casopis=23	2003 Onwards	Vol 53 Onwards
3	Asian Journal of Pharmaceutics	www.asiapharmaceutics.info	2007 Onwards	Vol 1 Onwards
4	Dissolution Technology	www.dissolutiontech.com	1994 Onwards	Vol 21 Onwards
5	Drug Delivery System	www.jstage.jst.go.jp/browse/dds	2006 Onwards	Vol 1 Onwards
6	Drug Metabolism and Disposition	www.dmd.aspetjournals.org	1997 Onwards	Vol 25 Onwards
7	Drug Metabolism and Pharmacokinetics	www.jstage.jst.go.jp/browse/dmpk	2002 Onwards	Vol 17 Onwards
8	PDA Journal of GMP and Validation in Japan	www.jstage.jst.go.jp/browse/pda	1999-2006	Vol 1 Onwards
9	Polymer Journal	www.jstage.jst.go.jp/browse/polymj	1970 Onwards	Vol 1 Onwards
10	The Open Drug Delivery Journal	www.bentham.org/open/toddj/index.htm	2007 Onwards	Vol 1 Onwards
11	The Open Drug Metabolism Journal	www.bentham.org/open/todmj/index.htm	2007 Onwards	Vol 1 Onwards
12	The Open Macromolecules Journal	www.bentham.org/open/tomacroj/index.htm	2007 Onwards	Vol 1 Onwards
13	The Open Nanoscience Journal	www.bentham.org/open/tonanoj/index.htm	2007 Onwards	Vol 1 Onwards

Table 1 (b): Pharmacology, toxicology, epidemiology, clinical pharmacy and physiology journals

S. No.	Journal	URL	Free Access	
			Year	Issues
1	Acta Clinica Croatica	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=158; http://www.acta-clinica.kbsm.hr/	2000 Onwards	Vol 39 Onwards
2	Acta Pharmacologica Sinica	www.chinaphar.com	1980 to 2004	Vol 1 to Vol 25
3	Advances in Pharmacological Sciences	www.hindawi.com/journals/aps	2007 Onwards	Vol 1 Onwards
4	AIDS Research and Therapy	http://www.aidsrestherapy.com	2004 Onwards	Vol 1 Onwards
5	Archives of Industrial Hygiene and Toxicology	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=7	1998 Onwards	Vol 49 Onwards
6	Australian Adverse Drug Reactions Bulletin	www.tga.gov.au/adr/aadrb.htm	1995 Onwards	Vol 14 to Vol 26
7	Australian Prescriber	www.australianprescriber.com	1994 Onwards	Vol 17 Onwards
8	Biomarker Insights	http://la-press.com/journal.php?journal_id=4	2006 Onwards	Vol 1 Onwards
9	Biophysics Journal	www.biophysj.org	1998 Onwards	Vol 74 Onwards (One Year Wall)
10	BMC Clinical Pathology	http://www.biomedcentral.com/bmcclinpathol/	2001 Onwards	Vol 1 Onwards
11	BMC Clinical Pharmacology	http://www.biomedcentral.com/bmcclinpharmacol/	2001 Onwards	Vol 1 Onwards
12	BMC Palliative Care	http://www.biomedcentral.com/bmcpalliatcare/	2002 Onwards	Vol 1 Onwards
13	BMC Pharmacology	http://www.biomedcentral.com/bmcparmacol	2001 Onwards	Vol 1 Onwards
14	BMC Physiology	www.biomedcentral.com/bmcpphysiol/	2001 Onwards	Vol 1 Onwards
15	British Journal of Clinical Pharmacology	www.blackwell-synergy.com/servlet/useragent?func=showIssues&code=bcp	1996 Onwards	Vol 41 Onwards
16	British Journal of Pharmacology	www.nature.com/bjp/index.html	1996 Onwards	Vol 120 Onwards
17	Canadian Journal of Clinical Pharmacology	www.cjcp.ca/hm	2004 Onwards	Vol 11 Onwards
18	Clinical Medicine (In various disciplines)	http://la-press.com	2005 Onwards	Vol 1 Onwards
19	Clinical Medicine and Research	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=252&action=archive	2003 Onwards	Vol 1 Onwards
20	Clinical Practice and Epidemiology in Mental Health	http://www.cpementalhealth.com/	2005 Onwards	Vol 1 Onwards
21	Croatian Medical Journal	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=54	2006 Onwards	Vol 47 Onwards
22	Croatian Sports Medicine Journal	http://hrcak.srce.hr/index.php?lang=en&show=casopis&id_casopis=41	2005 Onwards	Vol 20(2) Onwards
23	Cytojournal	www.cytojournal.com	2004 Onwards	Vol 1 Onwards
24	Drug Targets Insights	http://la-press.com/journal.php?journal_id=23	2006 Onwards	Vol 1 Onwards
25	Ecancermedicalscience	http://www.ecancermedicalscience.com	2007 Onwards	Vol 1 Onwards
26	Emerging Themes in Epidemiology	http://www.ete-online.com	2004 Onwards	Vol 1 Onwards

Table 1 (b). (Continued)

S. No.	Journal	URL	Free Access	
			Year	Issues
27	Environmental Health and Preventive Medicine	http://www.jstage.jst.go.jp/browse/ehpm	2000 Onwards	Vol 5 Onwards
28	Experimental Animal	www.jstage.jst.go.jp/browse/expanim	1995 Onwards	Vol 44 Onwards
29	Folia Pharmacologica Japonica	www.jstage.jst.go.jp/browse/fpj	1970 Onwards	Vol 66 Onwards
30	Hikaku seiri seikagaku (Comparative Physiology and Biochemistry)	www.jstage.jst.go.jp/browse/hikakuseiriseika	2006 Onwards	Vol 23 Onwards
31	Indian Journal of Pharmacology	www.ijp-online.com	2004 Onwards	Vol 36 Onwards
32	International Journal of Pharmacology	http://ansijournals.com/3/c4p.php?id=1&theme=3&jid=ijp	2005 Onwards	Vol 1 Onwards
33	The Internet Journal of Pharmacology	www.ispub.com/ostia/index.php?xmlFilePath=journals/ijpharm/front.xml	2001 Onwards	Vol 1 Onwards
34	Iranian Journal of Pharmacology & Therapeutics	www.bioline.org.br/toc?id=pt	2002-2006	Vol 1 to Vol 5
35	Japanese Journal of Pharmacology	www.jstage.jst.go.jp/browse/jjp	2003 Onwards	Vol 91 Onwards
36	Japanese Journal of Pharmacology	www.journalarchive.jst.go.jp/english/jnltop_en.php?cdjournal=jphs1951	1951-2002	Vol 1 to Vol 90
37	Journal of Allergy and Asthma	http://www.doveoa.com/journals.php?pa=toc&journal_id=31	2007 Onwards	Vol 1 Onwards
38	Journal of Anaesthesiology, Clinical Pharmacology	www.jstage.jst.go.jp/browse/cpb/char/en ; www.joacp.org	2002 Onwards	Vol 16 Onwards
39	Journal of Clinical Investigation	www.jci.org	1924 Onwards	Vol 1 Onwards
40	Journal of Clinical Pathology	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=81&action=archive	Vol 1 Onwards (3 Yr Wall)	1947 Onwards (3 Yr Wall)
41	Journal of Inflammation	www.journal-inflammation.com/	2004 Onwards	Vol 1 Onwards
42	Journal of Pharmacological Sciences	www.jstage.jst.go.jp/browse/jphs/-char/en	2003 Onwards	Vol 91 Onwards
43	Journal of Pharmacology and Experimental Therapeutics	www.jpvet.aspetjournals.org/	1997 Onwards	Vol 280 Onwards
44	Journal of Pharmacology and Toxicology	www.academicjournals.net/2/c4p.php?id=2&theme=2&jid=jpt	2006 Onwards	Vol 1 Onwards
45	Journal of Physiology and Pharmacology	www.jpp.krakow.pl/	2000 Onwards	Vol 51 Onwards
46	Journal of Postgraduate Medicine	www.jpgmonline.com	1980 Onwards	Vol 26 Onwards
47	Journal of Toxicologic Pathology	www.jstage.jst.go.jp/browse/tox	1998 Onwards	Vol 11 Onwards
48	Medica Jadertina	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=31	2005 Onwards	Vol 35 Onwards
49	Medical Devices: Evidence and Research	http://www.doveoa.com/journals.php?pa=toc&journal_id=22	2007 Onwards	Vol 1 Onwards
50	Medicus	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=170	2000 Onwards	Vol 9 Onwards
51	Medix	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=12 ; http://www.medix.com.hr	2004 and 2005	Vol 10 and Vol 11
52	Molecular Interventions	http://molinterv.aspetjournals.org/	April 2001 Onwards (One Year Wall)	Vol 1 Onwards (One Year Wall)
53	Molecular Pharmacology	http://molpharm.aspetjournals.org/	1997 Onwards (One Year Wall)	Vol 51 Onwards (One Year Wall)
54	Neuropsychopharmacology	www.nature.com/npp/index.html	1994 -2006	vol 11(3)-31
55	Onco Targets and Therapy	http://www.doveoa.com/journals.php?pa=toc&journal_id=26	2007 Onwards	Vol 1 Onwards
56	Open Medicine	www.openmedicine.ca	2007 Onwards	Vol 1 Onwards
57	Pathology and Laboratory Medicine	http://arpa.allenpress.com/arpaonline/?request=index-html	1999 Onwards	Vol 123 Onwards
58	Patient Preference and Adherence	http://www.doveoa.com/journals.php?pa=toc&journal_id=10	2007 Onwards	Vol 1 Onwards
59	Pharmacological Reports	www.if-pan.krakow.pl/pjp/POLISH.HTM	2005 Onwards	Vol 57 Onwards
60	Pharmacological Reviews	http://pharmrev.aspetjournals.org	1997-Onwards (One year Wall)	Vol 49 Onward
61	Polish Journal of Pharmacology	www.if-pan.krakow.pl/pjp/POLISH.HTM	1997-2004	Vol 50 to Vol 56
62	Prescribing & Medicines Management	www.pharmj.com/pmm	2002 Onwards	Jan/Feb 2002 Onwards

Table 1 (b). (Continued)

S. No.	Journal	URL	Free Access	
			Year	Issues
63	The Internet Journal of Toxicology	www.ispub.com/ostia/index.php?xmlFilePath=journals/ijto/front.xml		Vol 1 Onwards
64	The Japanese Journal of Pharmacology	www.journalarchive.jst.go.jp/english/jnltop_en.php?cdjournal=jphs1951	1951-1997	Vol 1-Vol 75
65	The Journal of Antimicrobial Chemotherapy	http://jac.oxfordjournals.org/	1996 Onwards	Vol 37 Onwards
66	The Journal of Clinical Pharmacology	www.jcp.sageub.com	2003 Onwards	Vol 43 Onwards
67	The Journal of Pharmacology and Experimental Therapeutics	http://jpet.aspetjournals.org/	1997 Onwards (One Year Wall)	Vol 280 Onwards (One Year Wall)
68	The Journal of Physiology	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=236&action=archive	1878 (1 Year Wall)	Vol 1 Onwards
69	The Journal of Toxicological Sciences	www.jstage.jst.go.jp/browse/jts	2001 Onwards	Vol 26 Onwards
70	The Open Pharmacology Journal	www.bentham.org/open/topharmj/index.htm	2007 Onwards	Vol 1 Onwards
71	Trials	www.trialsjournal.com	2000 Onwards	Vol 1 Onwards

Table 1 (c): Chemistry journals

S. No.	Journal	URL	Free Access	
			Year	Issues
1	Acta Chimica Solvenica	http://acta.chem-soc.si	1998 Onwards	Vol 45 Onwards
2	Asian Journal of Biochemistry	www.academicjournals.net/2/c4p.php?id=2&theme=2&jid=ajb	2006 Onwards	Vol 1 Onward
3	Beilstein Journal of Chemistry	http://bjoc.beilstein-journals.org/home	2005 Onwards	Vol 1 Onwards
4	Biochemica Medica	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=121; http://www.kbsm.hr/klinkemija/HDMB/BiochMed	1993 Onwards	Vol 3 Onward
5	BMC Chemical Biology	www.biomedcentral.com/bmcchembiol	2001 Onwards	Vol 1 Onwards
6	Bulletin of the Korean Chemical Society	http://newjournal.kcsnet.or.kr/main/j_search/?qpage=j_search	1980 Onwards	Vol 1 Onwards
7	Chemical and Biochemical Engineering Quarterly	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=9; http://www.fkit.hr/cabeq	2000 Onwards	Vol 14 Onwards
8	Chemical Education International	www.iupac.org/publications/cei/index.html	2000 Onwards	Vol 1 Onwards
9	Chemical Society Reviews	www.rsc.org/Publishing/Journals/CS/Index.asp	1997 to 2004	Vol 26 to Vol 33
10	Chemistry Central Journal	www.journal.chemistrycentral.com	2007 Onwards	Vol 1 Onwards
11	Chemistry in Industry	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=3	2005 Onwards	Vol 54(12) Onwards
12	Chemistry Letters	www.jstage.jst.go.jp/browse/cl	1989 Onwards	Vol 18 Onwards
13	Chemistry Letters	www.journalarchive.jst.go.jp/english/jnltop_en.php?cdjournal=cl1972	1972 to 1988	Vol 1 to Vol 17
14	The Clinical Biochemist Reviews	http://old.aacb.asn.au/pubs/cbr.htm	2003 Onwards	Vol 24 Onwards
15	Clinical Chemistry	www.clinchem.org	1955 to 2006	Vol 1 Onwards to 52 (9) (1 Yr Moving Wall)
16	Combinatorial Chemistry Online Journal	www.sciencedirect.com/science/journal/14643383	1998 Onwards	Vol 1 Onwards
17	Computational Biology and Chemistry: Advances and Applications	http://www.doveoa.com/journals.php?pa=toc&journal_id=23	2007 Onwards	Vol 1 Onwards
18	Croatia Chimica Acta	http://public.carnet.hr/ccaca	1998 Onwards	Vol 71 Onwards
19	Croatia Chimica Acta	http://hrcak.srce.hr/index.php?show=casopis&id_casopis=1	2005 Onwards	Vol 78 Onwards
20	Green Chemistry	www.rsc.org/Publishing/Journals/GC/Index.asp	1999 to 2004	Vol 1 to Vol 6
21	International Journal of Biological Chemistry	www.academicjournals.net/2/c4p.php?id=2&theme=2&jid=ijbc	2007 Onwards	Vol 1 Onwards
22	Journal of Business Chemistry	http://www.businesschemistry.org; http://www.wirtschaftschemie.de/journal	2004 Onwards	May 2004 Onwards
23	Journal of Chemical Sciences	http://www.ias.ac.in/chemsci/index.html; http://www.ias.ac.in/j_archive/chemsci/volindex.html	1977 Onwards	Vol 86 Onwards
24	Journal of Clinical Biochemistry and Nutrition	www.jstage.jst.go.jp/browse/jcjb	2004 Onwards	Vol 35 Onwards

Table 1 (c). (Continued)

S. No.	Journal	URL	Free Access	
			Year	Issues
25	Journal of Computer Aided Chemistry	www.jstage.jst.go.jp/browse/jcac	2000 Onwards	Vol 1 Onwards
26	Journal of Computer Chemistry	www.jstage.jst.go.jp/browse/jccj	2002 Onwards	Vol 1 Onwards
27	Journal of Nepal Chemical Society	www.nepjol.info/index.php/JNCS	2006 Onwards	Vol 21 Onwards
28	Journal of the Korean Chemical Society	http://newjournal.kcsnet.or.kr/main/j_search/?qpage=j_search	1949 Onwards	Vol 1 Onwards
29	Metal Based Drugs	www.hindawi.com/journals/mbd	1994 Onwards	Vol 1 Onwards
30	Molecules	www.mdpi.org/molecules	1996 Onwards	Vol 1 Onwards
31	Perspectives in Medicinal Chemistry	http://la-press.com/journal.php?journal_id=25	2007 Onwards	June 2007 Onwards
32	Pure and Applied Chemistry	www.iupac.org/publications/pac/index.html	1972 Onwards	Vol 31 Onwards
33	The Australian Journal of Education in Chemistry	www.raci.org.au/division/chemicaleducation/RACI_ChemEd/AJEC/info.html	2001 to 2005	Vol 57 to Vol 65
34	The Journal of Biological Chemistry	www.jbc.org	1905 Onwards	Vol 1 Onwards (1 Year Wall)
35	The Open Clinical Chemistry Journal	www.bentham.org/open/tocchemj/index.htm	2007 Onwards	Vol 1 Onwards
36	The Open Materials Science Journal	www.bentham.org/open/tomsj/index.htm	2007 Onwards	Vol 1 Onwards
37	The Open Medicinal Chemistry Journal	www.bentham.org/open/tomcj/index.htm	2007 Onwards	Vol 1 Onwards
38	The Open Thermodynamics Journal	www.bentham.org/open/totherj/index.htm	2007 Onwards	Vol 1 Onwards
39	The Open Biochemistry Journal	www.bentham.org/open/tobiocj/index.htm	2007 Onwards	Vol 1 Onwards

Table 1 (d): Pharmacognosy journals

S. No.	Journal	URL	Free Access	
			Year	Issues
1	BMC Complimentary and Alternative Medicine	www.biomedcentral.com/bmccomplementalmed	2001 Onwards	Vol 1 Onwards
2	Chinese Medicine	www.cmjournal.org	2006 Onwards	Vol 1 Onwards
3	Chiropractic and Osteopathy	www.chiroandosteo.com	2005 Onwards	Vol 13 Onwards
4	International Journal of Green Pharmacy	www.greenpharmacy.info	2007 Onwards	Vol 1 Onwards
5	Journal of Ethnobiology and Ethnomedicine	www.ethnobiomed.com	2005 Onwards	Vol 1 Onwards
6	Marine Drugs	www.mdpi.net/marinedrugs/index.htm	2003 Onwards	Vol 1 Onwards
7	Natural Products Review	www.rsc.org/Publishing/Journals/NP/index.asp	1997 to 2004	Vol 14 to Vol 21
8	Pharmacognosy Magazine	www.phcog.net/phcogmag	2005 Onwards	Vol 1 Onwards
9	Pharmacognosy Reviews	www.phcog.net/phcogrev	2007 Onwards	Vol 1 Onwards
10	Research Journal of Medicinal Plant	www.academicjournals.net/2/c4p.php?id=2&theme=2&jid=rjmp	2007 Onwards	Vol 1 Onwards
11	Research Journal of Phytochemistry	www.academicjournals.net/2/c4p.php?id=2&theme=2&jid=rjphyto	2007 Onwards	Vol 1 Onwards
12	The Open Natural Products Journal	www.bentham.org/open/tonpj/index.htm	2007 Onwards	Vol 1 Onwards
13	Revista Brasileira de Farmacognosia (Portuguese, English)	www.scielo.br/scielo.php/script_sci_serial/pid_0102-695X/Ing_en/nrm_iso	2006 Onwards	Vol 16 onwards

Table 1 (e): Microbiology, biotechnology and bioinformatics journals

S. No.	Journal	URL	Free Access	
			Year	Issues
1	African Journal of Biotechnology	www.academicjournals.org/AJB www.bioline.org.br/jb	2002 Onwards	Vol 1 Onwards
2	Annals of Clinical Microbiology and Antimicrobials	www.ann-clinmicrob.com	2002 Onwards	Vol 1 Onwards
3	Antimicrobial Agents and Chemotherapy	www.pubmedcentral.nih.gov/tocrender.fcgi?action=archive&journal=82; http://aac.asm.org/	1972 Onwards	Vol 1 Onwards
4	Australasian Biotechnology	www.bioline.org.br/au	1996 to 2002	6(3) to 12(5)

Table 1 (e). (Continued)

S. No.	Journal	URL	Free Access	
			Year	Issues
5	Bioinformatics and Biology Insights	http://la-press.com/journal.php?journal_id=39	2007 Onwards	Vol 1 Onwards
6	Bioscience, Biotechnology and Biochemistry	www.jstage.jst.go.jp/browse/bbb	1998 Onwards	Vol 62 Onwards
7	Biotechnology	http://ansijournals.com/3/c4p.php?id=1&theme=3&jid=biotech	2002 Onwards	Vol 1 Onwards
8	BMC Bioinformatics	www.biomedcentral.com/bmcbioinformatics	2000 Onwards	Vol 1 Onwards
9	BMC Biotechnology	www.biomedcentral.com/bmcbiotechnol	2001 onwards	Vol 1 Onwards
10	BMC Genomics	www.biomedcentral.com/bmcgenomics	2000 Onwards	Vol 1 Onwards
11	Chem-Bio Informatics Journal	www.jstage.jst.go.jp/browse/cbij	2001 to 2006	Vol 1 to Vol 6 (3)
12	Clinical Microbiology Reviews	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=85&action=archive	1998 to (1 Year Wall)	Vol 1 Onwards (1 Year Wall)
13	Electronic Journal of Biotechnology	www.ejbiotechnology.info	1998 Onwards	Vol 1 Onwards
14	Evolutionary Bioinformatics	http://la-press.com/journal.php?journal_id=17	2005 Onwards	Vol 1 Onwards
15	Journal of Biomedicine and Biotechnology	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=94&action=archive	2001 Onwards	Vol 1 Onwards
16	Journal of Clinical Microbiology	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=81&action=archive	1975 Onwards	Vol 1 Onwards
17	Journal of Genetics	http://www.ias.ac.in/jgenet/index.html ; http://www.ias.ac.in/j_archive/jgenet/volindex.html	1910 Onwards	Vol 1 Onwards (Vol 5 to 15 Not Available)
18	Journal of Nanobiotechnology	www.jnanobiotechnology.com/	2003 Onwards	Vol 1 Onwards
19	Medical immunology	www.medimmunol.com/	2002 Onwards	Vol 1 Onwards
20	Microbiology and Molecular Microbiology Reviews	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=146&action=archive	1997 Onwards (One year Wall)	Vol 61 Onwards
21	Molecular Medicine	www.pubmedcentral.nih.gov/tocrender.fcgi?journal=325&action=archive	2000 Onwards	Vol 6 Onwards
22	PLoS Genetics	www.plosgenetics.org	2005 Onwards	Vol 1 Onwards
23	Research Journal of Microbiology	www.academicjournals.net/2/c4p.php?id=2&theme=2&jid=jm	2006 Onwards	Vol 1 Onwards
24	Stem Cells and Cloning: Advances and Applications	http://www.doveoa.com/journals.php?pa=toc&journal_id=24	2007 Onwards	Vol 1 Onwards
25	The Open Biochemistry Journal	www.bentham.org/open/tobiocj/index.htm	2007 Onwards	Vol 1 Onwards
26	The Open Genetics Journal	www.bentham.org/open/togenj/index.htm	2007 Onwards	Vol 1 Onwards
27	The Open Microbiology Journal	www.bentham.org/open/tomicroj/index.htm	2007 Onwards	Vol 1 Onwards

Table 1 (f): Analysis journals

S. No.	Journal	URL	Free Access	
			Year	Issues
1	Acta Chromatographica	www.us.edu.pl/universytet/jednostki/wydzialy/chemia/acta/tekst/index.html	1996 Onwards	Vol 6 Onwards
2	Analytical Chemistry Insights	http://la-press.com/journal.php?journal_id=1	2006 Onwards	Vol 1 Onwards
3	Analytical Communications	www.rsc.org/Publishing/Journals/ac	1997 to 1999	Vol 34 to Vol 36
4	International Journal of Drug Testing	www.criminology.fsu.edu/journal	1995 Onwards	Vol 1 Onwards
5	Journal of Analytical Atomic Spectroscopy	www.rsc.org/Publishing/Journals/JA/index.asp	1997 to 2004	Vol 12 to Vol 19
6	Sensors	www.mdpi.org/sensors/	2001 Onwards	Vol 1 Onwards
7	Sensors & Transducers Journal (S&T e-Digest)	www.sensorsportal.com	2000 to 2006	Vol 1 Onwards
8	The Analyst	www.rsc.org/Publishing/Journals/an/index.asp	1997 to 2004	Vol 122 to Vol 129
9	The Open Spectroscopy Journal	www.bentham.org/open/tospecj/index.htm	2007 Onwards	Vol 1 Onwards

Table 1 (g): Multidisciplinary pharmaceutical sciences journals

S. No.	Journal	URL	Free Access	
			Year	Issues
1	AAPS Journal	www.aapsj.org	2004-2007	6(3)-9
2	AAPS PharmSci	www.aapspharmsci.org	1999-2004	Vol 1 to Vol 6(2)
3	Acta Veterinaria Brno	http://vfu-www.vfu.cz/acta-vet/actavet.php	2000 Onwards	Vol 68 Onwards
4	American Journal of Pharmaceutical Education	www.ajpe.org	1994 Onwards	Vol 58 to Vol 71
5	ARS Pharmaceutica	http://farmacia.ugr.es/ars/arsen.php	2006 Onwards	Vol 47 Onwards

Table 1 (g). (Continued)

S. No.	Journal	URL	Free Access	
			Year	Issues
6	Biological and Pharmaceutical Bulletin	www.bpb.pharm.or.jp ; www.jstage.jst.go.jp/browse/bpb	2006 Onwards	Vol 29(11) Onwards
7	Biomedical Digital Libraries	www.bio-diglib.com	2004 Onwards	Vol 1 Onwards
8	Brazilian Journal of Pharmaceutical Sciences (Revista Brasileira de Ciências Farmacêuticas (Portuguese, English, Spanish)	www.scielo.br/scielo.php?script=sci_serial&lng=en&pid=1516-9332&nrm=iso	2004 Onwards	Vol 40 onwards
9	Bulletin of Materials Science	http://www.ias.ac.in/matersci/index.html; http://www.ias.ac.in/j_archive/bms/volindex.html	1979 Onwards	Vol 1 Onwards
10	Chemical and Pharmaceutical Bulletin	www.cpb.pharm.or.jp/ ; www.jstage.jst.go.jp/browse/cpb	2006 Onwards	Vol 54(11) Onwards
11	Current Science	http://www.ias.ac.in/currsci/index.html; http://www.ias.ac.in/j_archive/currsci/volindex.html	1932 Onwards	Vol 1 Onwards
12	Daru	www.diglib.tums.ac.ir/pub/mag_desc.asp?mag_id=1&shom_id=58	2000 Onwards	Vol 8 (3/4) Onwards
13	The Dhaka University Journal of Pharmaceutical Sciences (Online issue)	www.pharmadu.net/dujps/index.php	2004 Onwards	Vol 3 Onwards
14	The Dhaka University Journal of Pharmaceutical Sciences	www.banglajol.info/index.php/JPharma	2006 Onwards	Vol 5 Onwards
15	Drug Delivery Technology	www.drugdeliverytech.com; www.drugdeliverytech-online.com	2001 Onwards	Vol 1 Onwards
16	Drug Design Development and Therapy	http://www.doveoa.com/journals.php?pa=toc&journal_id=4	2007 Onwards	Vol 1 Onwards
17	Drug Information Journal	www.findarticles.com/p/articles/mi_qa3899	1998 Onwards	July-Sept. 1998 Onwards
18	Electronic Journal of Health Informatics	http://ejhi.net/ojs/index.php/ejhi	2007 Onwards	Vol 1 Onwards
19	Experts Reviews in Molecular Medicine	www.expertreviews.org	1999 to 2002	---
20	Health Information and Libraries Journal	www.blackwell-synergy.com/loi/HIR	1984 to 2004	Vol 1 to 21 (Three Year Moving Wall)
21	Hospital Pharmacist	www.pharmj.com/hospital	2000 Onwards	Vol 7 Onwards
22	Indian Journal of Pharmaceutical Education & Research (IJPER)	www.ijper.org	2005 to 2007	Vol. 39 (5) Onwards
23	Indian Journal of Pharmaceutical Sciences	www.ijpsonline.com	2006 Onwards	Vol 68 Onwards
24	Integrative Medicine Insights	http://la-press.com/journal.php?journal_id=21	2006 Onwards	Feb 2007 Onwards
25	International Journal of Biomedical Sciences	http://www.waset.org/ijbs/	2006 Onwards	Vol 1 Onwards
26	International Journal of Pharmacy Education & Practice	www.samford.edu/schools/pharmacy/ijpe/index.htm	2003 to 2006	Vol 1 to Vol 3
27	Iranian Journal of Pharmaceutical Research	www.ijpr-online.com	2002 to Onwards	Vol 1 Onwards
28	Japanese Journal of Pharmaceutical Health Care and Science	http://www.jstage.jst.go.jp/browse/jjphcs	2006 Onwards	Vol 32 Onwards
29	Journal of Applied Research	www.jrnlappliedresearch.com	2001 Onwards	Vol 1 Onwards
30	Journal of Biosciences	http://www.ias.ac.in/jbiosci/index.html	1998 Onwards	Vol 23 Onwards
31	Journal of Health Science	www.jstage.jst.go.jp/browse/jhs	2001 Onwards	Vol 47 Onwards
32	Journal of Multidisciplinary Healthcare	http://www.doveoa.com/journals.php?pa=toc&journal_id=20	2007 Onwards	Vol 1 Onwards
33	Journal of Nanotechnology and Applications	http://www.doveoa.com/journals.php?pa=toc&journal_id=13	2007 Onwards	Vol 1 Onwards
34	Journal of Pharmacobio-Dynamics	www.journalarchive.jst.go.jp/english/jnltop_en.php?cdjournal=bpb1978	1978	Vol. 1 Only
35	Journal of Pharmacy and Pharmaceutical Sciences	www.ualberta.ca/~csp/Journals/JPPS.htm	1998 Onwards	Vol 1 Onwards
36	Materials and Technologies (English and Slovenian)	http://ctklj.ctlk.uni-lj.si/kovine/mit/	2000 Onwards	Vol 34 Onwards
37	Materials Today	www.sciencedirect.com/science/journal/13697021	2002 Onwards	Vol 5 Onwards
38	Medical Informatics Insights	http://la-press.com/journal.php?journal_id=82	2007 Onwards	---
39	Online Journal of Health Ethics	http://ethicsjournal.umc.edu/ojs2/index.php/ojhe	2007 Onwards	Vol 1 Onwards

Table 1 (g). (Continued)

S. No.	Journal	URL	Free Access	
			Year	Issues
40	Pakistan Journal of Pharmaceutical Sciences	www.pjps.pk	2005 Onwards	Oct 2005 Onwards
41	Pharmaceutical Journal	www.pjonline.com/pj	1999 Onwards	Vol 262 Onwards
42	PLoS Medicine	http://medicine.plosjournals.org	2004 Onwards	Vol 1 Onwards
43	Polymer Journal	www.jstage.jst.go.jp/browse/polymj	1970 Onwards	Vol. 1 Onwards
44	Prescribing & Medicines Management	www.pharmj.com/pmm	2002 Onwards	Jan/Feb 2002 Onwards
45	Resonance	http://www.ias.ac.in/resonance/index.html	1996 Onwards	Vol 1 Onwards
46	Revista de la Facultad de Farmacia (Portuguese, English)	www.saber.ula.ve/farmacia	2001 to 2006	Vol 42 to Vol 48
47	Saudi Pharmaceutical Journal	http://www.ksu.edu.sa/colleges/pharm/spj.htm	2003 Onwards	Vol 11 Onwards
48	South African Pharmaceutical Journal	www.sapj.co.za/index.php/SAPJ	2006 Onwards	Vol 73 Onwards
49	The Journal of Antimicrobial Chemotherapy	http://jac.oxfordjournals.org/	1996 Onwards (1 Year Wall)	Vol 37 Onwards (1 Year Wall)
50	The Pharma Reviews	http://www.kppub.com/pharma_review.htm	2005 Onwards	Aug 2005 Onwards
51	Tropical Journal of Pharmaceutical Research	http://www.bioline.org.br/pr	2002 to 2007	Vol 1 Onwards
52	Tropical Journal of Pharmaceutical Research	www.tjpr.org	2002-Onwards	Vol 1 Onwards
53	WHO Drug Information	www.who.int/druginformation	1996 Onwards	Vol 10 Onwards
54	Yakugaku Zasshi-Journal of the Pharmaceutical Society of Japan	http://yakushi.pharm.or.jp ; www.jstage.jst.go.jp/browse/yakushi/-char/en	2001 Onwards	Vol 121 Onwards

Table 2 (a): Pharmaceutics magazines

S. No.	Magazine	URL	Free Access	
			Year	Issues
1	Biopharm International	www.biopharminternational.com	2001 Onwards	Oct 2001 Onwards
2	Pharmaceutical & Medical Packaging News	www.devicelink.com/pmpn	1998 Onwards	Jan 1998 Onwards
3	Pharmaceutical Manufacturing	www.pharmamanufacturing.com	2002 Onwards	2002 Onwards
4	Pharmaceutical Technology	www.pharmtech.com	2002 Onwards	Aug 2002 Onwards
5	Pharmaceutical Technology Asia Pacific	www.ptasiapacific.com	2007 Onwards	Mar 2007 Onwards
6	Pharmaceutical Technology Europe	www.ptemag.com	2002 Onwards	Oct 2002 Onwards

Table 2 (b): Pharmacology, toxicology and physiology magazines

S. No.	Magazine	URL	Free Access	
			Year	Issues
1	Applied Clinical Trials	www.actmagazine.com/appliedclinicaltrials	2001 Onwards	Jul 2001 Onwards
2	Preclinica	www.preclinica.com	2003 Onwards	Mar/April 2003 Onwards

Table 2 (c): Chemistry magazines

S. No.	Magazine	URL	Free Access	
			Year	Issues
1	E-Polymers	www.e-polymers.org	2001 Onwards	2001 Onwards
2	Chemistry International	www.iupac.org/publications/ci/index.html	1997 Onwards	Vol 19(4) Onwards
3	Nandini Chemical Journal	www.nandinichemical.com/online_journal.htm	2003 Onwards	May 2003 Onwards
4	Chemistry in Australia	www.raci.org.au/chemaust	2004 Onwards	Mar 2004 Onwards
5	Chemical Processing	http://www.chemicalprocessing.com	1998 Onwards	Feb 1998 Onwards
6	Today's Chemist at Work	http://pubs.acs.org/journals/tcwoe7/index.html	2000-2004	Nov. 2000 to Dec.2004

Table 2 (d): Pharmacognosy magazines

S. No.	Magazine	URL	Free Access	
			Year	Issues
1	Natural Products Insider	www.naturalproductsinsider.com	1999 Onwards	Jun 1999 Onwards
2	Neutraceuticals World	www.nutraceuticalsworld.com	1998 Onwards	Dec 1998 Onwards
3	Marine Drugs	www.mdpi.net/marinedrugs	2003 Onwards	Vol 1 Onwards

Table 2 (e): Microbiology, biotechnology and bioinformatics magazines

S. No.	Magazine	URL	Free Access	
			Year	Issues
1	Bio Techniques	www.biotechniques.com	1983 Onwards	Vol 1 Onwards
2	Bioprocess International	www.bioprocessintl.com ; www.bioprocessasiapacific.com	2003 Onwards	Jan 2003 Onwards
3	Controlled Environment	http://www.cemag.us	2003 Onwards	Jan 2003 Onwards

Table 2 (f): Analysis magazines

S. No.	Magazine	URL	Free Access	
			Year	Issues
1	Spectroscopy	http://chromatographyonline.findpharma.com/	2001 Onwards	April 2001 Onwards
2	LC/GC North America	http://chromatographyonline.findpharma.com/	2000 Onwards	Oct 2000 Onwards
3	LC/GC Europe	www.lcgceurope.com	2001 Onwards	Jan 2001 Onwards

Table 2 (g): Multidisciplinary pharmaceutical sciences magazines

S. No.	Magazine	URL	Free Access	
			Year	Issues
1	Australian Prescriber	www.australianprescriber.com	1994 Onwards	Vol 17 Onwards
2	Bio-IT World	www.bio-itworld.com	2002 Onwards	March 2002 Onwards
3	Contract Pharma	www.contractpharma.com	1999 Onwards	Dec 1999 Onwards
4	Control Services Europe	www.csemagazine.com	2005 Onwards	Feb 2005 Onwards
5	Drug Discovery & Development	www.dddmag.com	2005 Onwards	Jan 2005 Onwards
6	Drug Discovery News	www.drugdiscoverynews.com	2005 Onwards	Jan 2005 Onwards
7	Drug Topics	www.drugtopics.com	2003 Onwards	June 2003 Onwards
8	Express Pharma Pulse	www.expresspharmaonline.com	2005 Onwards	Nov 2005 Onwards
9	Food and Drug Packaging	www.fdp.com	2006 Onwards	Jan 2006 Onwards
10	Formulary	www.formularyjournal.com/formulary	2001 Onwards	Jul 2001 Onwards
11	Hospital Pharmacist	www.pjonline.com/hp/index.html	2000 Onwards	Vol 7 Onwards
12	Lab Manager	http://labmanager.com/	2006 Onwards	April 2006 Onwards
13	Material Matters	www.sigmaaldrich.com/Area_of_Interest/Chemistry/Materials_Science/Key_Resources/Material_Matters/Material_Matters_US.html	2006 Onwards	Vol 1 Onwards
14	Modern Drug Discovery	http://pubs.acs.org/journals/mdd/indx.html	1998 Onwards	Sept. 1998 Onwards
15	Next Generation Pharmaceutical	www.ngpharma.com	2004-Onwards	Nov 2004 Onwards

Table 2 (g). (Continued)

S. No	Magazine	URL	Free Access	
			Year	Issues
16	Pharm Focus Asia	www.pharmfocusasia.com	2005 Onwards	Sept. 2005 Onwards
17	Pharma & Bio Ingredients	www.pharmabioingredients.com	2004-Onwards	Dec 2004 Onwards
18	Pharmaceutical Executive	www.pharmexec.com	2001-Onwards	Jan 2001 Onwards
19	Pharmaceutical Representative	www.pharmrep.com	2002-Onwards	Jan 2002 Onwards
20	Pharmacy Practice	www.pharmacypractice.org	2006 Onwards	Vol 4 Onwards
21	Pharmacy Times	www.pharmacytimes.com	2001 Onwards	Sep. 2001 Onwards
22	Prescriber Update	www.medsafe.govt.nz/Profs/PUarticles.asp	2001 to 2006	Vol 20 to Vol 27
23	TIFAC IPR Bulletin	www.pfc.org.in/fac/bull.htm	1999 Onwards	Vol 5(2) Onwards
24	U. S. Pharmacist	www.uspharmacist.com	1996 Onwards	Vol 21(9) Onwards
25	WHO Pharmaceuticals Newsletter	www.who.int/medicines/publications/newsletter/en	2002 Onwards	2002 (1) Onwards
26	WIPO Magazine	www.wipo.int/wipo_magazine/en/index.html	2006 Onwards	Vol 1 Onwards

Table 3: Drug information resources

S. N.	Drug Information Resource	URL	Drug Information Available
1	Drug Digest	www.drugdigest.com	Drug library, interactions, compare drugs, conditions and treatments, interactive tools
2	Drug Lib Drug Information Portal	www.druglib.com	Drugs by name, drugs by category, drugs by condition
3	Drug Store	www.drugstore.com	Drug price and drug information, ask your pharmacist
4	Drugs Update	www.drugsupdate.org	Indian drug product information
5	Drugs.com Drug Information Online	www.drugs.com	Drugs and medications, disease and conditions, pharmaceutical news and articles, pill identifier, drug interaction checker, medical encyclopedia, medical dictionary, and community forums
6	EmedicineHealth	www.emedicinehealth.com	Emergency care and consumer health
7	FDA Drug Index	www.fda.gov/cder/drug/default.htm	Patient information sheets, drug interactions, drug information pathfinder, consumer drug information, OTC drug information, clinical trials information etc
8	Infomed Drug Guide	www.infomed.org/100drugs	Pharmacology, indications, adverse reactions, contraindications, risk groups, pharmacokinetics
9	Medline Plus Drug Information	www.nlm.nih.gov/medlineplus/druginformation.html	Drugs, supplements, and herbal information, health information, encyclopedia, dictionary, medical dictionary, news and directories
10	Merck Manual for Healthcare Professionals	www.merck.com/mmpe/index/index.html	Disease overviews, treatment options, drug information, clinical trials
11	Merck Manual Home Edition For Patients and Caregivers	www.merck.com/mmhe/index.html	Disorders, drug names generic and trade, common medical tests, anatomical models and drawings, multimedia, pronunciations
12	PDR Health	www.pdrhealth.com	Disease overviews, treatment options, drug information, clinical trials
13	Rxlist.com The Internet Drug Index	www.rxlist.com	Drugs A to Z, pill identifier, disease and conditions
14	Safe Medication	http://www.safemedication.com/	Medication administration, pharmacist Q and A, trade name
15	Thomson Center Watch	http://centerwatch.com/	For Patients: Clinical trial listings, drug directories, patient bookstore, health associations, notification services, about clinical research For Professionals: Clinical trials results, drugs in clinical trials, site identification services, jobs, professional bookstore, product and service providers

Table 4: Speciality search engines

S. No.	Name	URL	Purpose of Search Engine
1	Chemfinder	http://chemfinder.cambridgesoft.com	Database and internet searching chemicals
2	Chemindustry	www.chemindustry.com/	Searching chemicals by name and structure
3	Chemrefer	www.chemrefer.com	Chemical and Pharmaceutical Literature Search Engine
4	Emolecules	www.emolecules.com	Chemical searching
5	Google Scholar	http://scholar.google.co.in/	Searching for scholarly literature
6	PubMed	http://www.ncbi.nlm.nih.gov/sites/entrez/	Searching life science for biomedical articles
7	Scinet	www.scinet.cc	Science and Technology Search Engine
8	Scirus	www.scirus.com	Scientific Information Search Engine

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