Maximizing Research Impact of Scientific Publications from Developing Countries through Open Access: Experience from Bioline International

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University of Toronto at Scarborough
History and Mission

- Established in 1993
- Explore ways of using ICT to improve scientific communications
- Bridge the South-to-North Knowledge gap
- Improving visibility, accessibility, and research impact of science from developing countries
- Making the “lost” science visible
What is Bioline International?

- Electronic aggregator of full text journals from developing countries
- OAI data provider
- Development project - what do readers and authors want?
- Aims to influence scholarly communication practices and access to research literature
- Will open access improve the visibility and impact of journals from developing countries?
Three Aspects

• Service
• Research
• Development
Services

- Free electronic publishing, distribution and archiving for participating journals
- Technical support for individual and library users
- Promotion of participating journals to library consortia and research institutions
- Connecting authors and publishers
Research

• Will open access increase journal usage and sustainability?
• How do researchers in developing countries use publications and what is their citation pattern?
• Does the site of research publication affects the likely impact of research findings on medical practices (Ptolomy project)?
Development

- Value-added services that improve citation and discovery (e.g. Species linking tool)
- Integration of open-source tools
- Create alternative low-cost and collaborative model of scholarly publishing that is also portable
- Technology transfer and human resource development (partnership with OSI, Electronic Publishing Trust for Development and others)
Partners

• CRIA – Centro de Referência em Informação Ambiental (Campanis, Brazil)
  www.cria.org.br
  (Reference Center for Environmental Information)
  Make scientific research useful and “useable” in a way that it can be incorporated in the definition of local, regional and national strategies for conservation and sustainable use of natural resources.

  Sidnei de Souza, Vanderlai Canhos, Dora Canhos
Partners

EPT, UK

UT, Canada

CRIA, Brazil

International Conference on Strategies and Policies for Open Access to Scientific Information
June 22-24, Beijing, China
…Partners

- Publishers from Africa (Kenya, Nigeria, South Africa, Uganda), Latin America (Brazil, Chile, Venezuela), India, Turkey and more…

- University of Toronto Libraries

- Department of Social Sciences, University of Toronto at Scarborough
International Conference on Strategies and Policies for Open Access to Scientific Information
June 22-24, Beijing, China
Collaboration provides

• Shared resources and technology
• Zero to very low start up cost
• Tested technology
• Acts as PubMedCentral for less developed countries
• Cross-linking and hyper-linking
• Advantage of established ranking and search positions (Google Scholar, ISI Web of Content)
• Full Integration with Eprints/T-Space server for long term archiving
Operational aspects

NEW ISSUE PUBLISHED

FILES GATHERED / CREATED

ARTICLE CONVERSION

IMAGE CONVERSION

FINAL TOUCHES & CHECKING FOR ACCURACY

UPLOAD & CHECK

EPrints & ARCHIVING

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Technical infrastructure

Low cost hardware
  – Intel based computers

Open Source / free software
  – Red Hat Linux OS
  – Perl
  – Javascript
  – PostgreSQL database
  – Apache Web Server

• Standard Technologies
  – HTML, XML, XSLT, SQL, SOAP
Effect of the production of lactic acid from wheat germ extracts on their ability to ferment breads. 
Claude P. Champagne, University of Paris, France.

Abstract
Three lactic acid bacteria were added in different concentrations to brewers' YE and to a yeast extract. A systematic preference for the other lactic acid bacteria was observed. The lactic acid bacteria were more productive than brewers' YE, but the yeast extract was preferred. Factors such as the concentration of lactic acid bacteria and the yeast extract were found to influence the growth of the lactic acid bacteria. The results showed that the yeast extract was more productive than brewers' YE and that a mixture of the two was required for the growth of the lactic acid bacteria. The yeast extract was more productive than the lactic acid bacteria and the yeast extract was found to be more productive than the lactic acid bacteria.
An antifungal activity from Ocimum gratissimum L. towards Cryptococcus neoformans

Janine de Aquino Lemos, Xisto Sena Passos, Orionalda de Fátima Lisboa Fernandes, José Realino de Paula, Pedro Henrique Ferri, Lúcia Kioko Hasimoto e Souza, Aline de Aquino Lemos, Maria do Rosário Rodrigues Silva

Ocimum gratissimum, essential oil, eugenol, Cryptococcus neoformans

Cryptococcal infection had an increased incidence in last years due to the explosion of acquired immune deficiency syndrome epidemic and by using new and effective immunosuppressive agents. The current antifungal therapies used such as amphotericin B, fluconazole, and itraconazole have certain limitations due to side effects and emergence of resistant strains. So, a permanent search to find new drugs for cryptococcosis treatment is essential. Ocimum gratissimum, plant known as alfavaca (Labiatae family), has been reported earlier with in vitro activity against some bacteria and dermatophytes. In our work, we study the in vitro activity of the ethanolic crude extract, ethyl acetate, hexane, and chloroformic fractions, essential oil, and eugenol of Ocimum gratissimum using an agar dilution susceptibility method towards 25 isolates of Cryptococcus neoformans. All the extracts of Ocimum gratissimum studied showed activity in vitro towards C. neoformans. Based on the minimal inhibitory concentration values the most significant results were obtained with chloroformic fraction and eugenol. It was observed that chloroform fraction inhibited 23 isolates (92%) of C. neoformans at a concentration of 62.5 μg/ml and eugenol inhibited 4 isolates (16%) at a concentration of 0.9 μg/ml. This screening may be the basis for the study of Ocimum gratissimum as a possible antifungal agent.
Results of OA so far - conventional

- Bioline journals included in numerous library e-journal & e-resource lists
- Inclusion in Ulrich’s Serials Directory
- Project recommended to journals by officials at the WHO
Hits represents the number of server requests made each month. This includes pages, images, PDF documents, as well as failed requests and cache updates.
Files represent the number of requests resulting in a file successfully transferred to the browser. In particular, it excludes "page not found" errors and pages cached by the browser.
### Sample Bioline usage statistics

<table>
<thead>
<tr>
<th>Journal Name</th>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorias do Instituto Oswaldo Cruz (2068 articles)</td>
<td></td>
<td>11526</td>
<td>33001</td>
<td>116971</td>
</tr>
<tr>
<td>Neurology India (583 articles)</td>
<td></td>
<td>0</td>
<td>13295</td>
<td>41836</td>
</tr>
<tr>
<td>Journal of Postgraduate Medicine (500 articles)</td>
<td></td>
<td>2635</td>
<td>28187</td>
<td>43392</td>
</tr>
<tr>
<td>African Crop Science Journal (368 articles)</td>
<td></td>
<td>6319</td>
<td>18556</td>
<td>37716</td>
</tr>
<tr>
<td>Agricultura Tecnica (263 articles)</td>
<td></td>
<td>856</td>
<td>9946</td>
<td>27621</td>
</tr>
<tr>
<td>Indian Journal of Dermatology, Venereology and Leprology (253 articles)</td>
<td></td>
<td>0</td>
<td>1489</td>
<td>14997</td>
</tr>
<tr>
<td>Indian Journal of Surgery (237 articles)</td>
<td></td>
<td>0</td>
<td>11256</td>
<td>38389</td>
</tr>
<tr>
<td>African Journal of Biotechnology (212 articles)</td>
<td></td>
<td>249</td>
<td>11948</td>
<td>45732</td>
</tr>
<tr>
<td>Electronic Journal of Biotechnology (203 articles)</td>
<td></td>
<td>0</td>
<td>9169</td>
<td>37502</td>
</tr>
<tr>
<td>Indian Journal of Medical Sciences (157 articles)</td>
<td></td>
<td>0</td>
<td>7894</td>
<td>46358</td>
</tr>
</tbody>
</table>

Table 1. The ten journals with the most number of articles and their respective hits from 2002 to 2004
Fig 2. Graph showing the hits of the ten journals with the most number of articles
OA results

• Referral
  – 1st: Google (51892)
  – 2nd: Yahoo (16969)
  – 16th: DOAJ (3295)
  – 22nd: Eprints server (2168)

• Country domains
  – 55% (1,631,169) with IP from N. America
  – Europe (9.98%), South America (6.11%), Asia (4.13%), Oceania (1.14%) and Africa (<1%)
Journal of Postgraduate Medicine

- Started in 1955
- Publication of Staff Society of GS Medical College and KEM Hospital, India
- Covers basic and clinical sciences
- Joined Bioline International in June 2002
Number of articles submitted, JPGM

Data from D.K. Sahu
Role of JPGM in collaboration

- Content
- Promotion
- Linking from PubMed as LinkOut
- Technology transfer
- Encouraging other journals
### Journal of Postgraduate Medicine

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submissions and acceptance rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articles received</td>
<td>438</td>
<td>629</td>
</tr>
<tr>
<td>Decisions taken</td>
<td>437</td>
<td>550</td>
</tr>
<tr>
<td>Articles accepted</td>
<td>143 [33%]</td>
<td>106 [19%]</td>
</tr>
<tr>
<td><strong>Submissions from outside India</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All articles</td>
<td>166 (38%)</td>
<td>189 (30%)</td>
</tr>
<tr>
<td>Original research papers</td>
<td>15%</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Journal's performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time taken for first decision</td>
<td>24.78</td>
<td>31.82</td>
</tr>
<tr>
<td>Days from first submission to acceptance</td>
<td>62.92[0, 181]</td>
<td>72.48[0, 217]</td>
</tr>
<tr>
<td>Days from acceptance to publication</td>
<td>71.16[1,192]</td>
<td>74.80[3,195]</td>
</tr>
<tr>
<td><strong>Number of reviewers</strong></td>
<td>1432</td>
<td>1699</td>
</tr>
</tbody>
</table>

Data from D.K. Sahu
International Conference on Strategies and Policies for Open Access to Scientific Information
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Data from D.K. Sahu
International submissions

International Conference on Strategies and Policies for Open Access to Scientific Information
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Data from D.K. Sahu

From India
Overseas
Effect on citations

Data from D.K. Sahu

Journal of Postgraduate Medicine

International Conference on Strategies and Policies for Open Access to Scientific Information
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Data from D.K. Sahu
### Journal of Postgraduate Medicine

#### Increasing Citation

<table>
<thead>
<tr>
<th>Publication year</th>
<th>Citation year</th>
<th>Total number of citations in scientific journals (A)</th>
<th>No of articles other than editorials, letters, and news (B)</th>
<th>A/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-1999</td>
<td>2000</td>
<td>2</td>
<td>60</td>
<td>0.03</td>
</tr>
<tr>
<td>1999-2000</td>
<td>2001</td>
<td>12</td>
<td>111</td>
<td>0.11</td>
</tr>
<tr>
<td>2000-2001</td>
<td>2002</td>
<td>34</td>
<td>147</td>
<td>0.23</td>
</tr>
<tr>
<td>2001-2002</td>
<td>2003</td>
<td>62</td>
<td>155</td>
<td>0.40</td>
</tr>
<tr>
<td>2002-2003</td>
<td>2004</td>
<td>137</td>
<td>173</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Sources: ISI Web of Science, Scopus, Google Scholar
Problems with journals from DC

- Low Circulation
- Low submission
- Poor Visibility
- Lost impact

The volume one, number one syndrome
Breaking the cycle through open access
Vicious cycle ---> Circle of Accessibility
Lessons Learned

• Journals from DCs are tough to sell - no matter the quality
• Need to consider new sustainability models
• Conversion to open access is essential for some low circulation but high quality journals
...Lessons learned

• Aggregation is important
• Interoperability is crucial - OAI is the glue
• Journal funding should not be tied to subscription return - should be tied to impact
Future Plans

• Expand the number of journals (with grant from OSI)
• Promotion to library consortia (work with eIFL)
• XML for full text
• Multilingual content
• More sophisticated reference linking (OpenURL)
Future plans

- Improve user interface and linking
- Better tracking of usage pattern - Ptolomy Project
- Multiple mirror sites for Bioline - India, Africa
Conclusions

• Funding agencies must be clear on why they support journals in developing countries
  – Avoid the Volume 1, number 1 syndrome
  – Transition to open access with new business plan
• Government agencies should support and promote local journals - think beyond impact factor, promote open archives and sharing
...Conclusions

• Open access is only the essential first step. What to do with the open access material is even more critical.
Please visit

http://www.bioline.org.br

http://bioline.utsc.utoronto.ca
(eprints server)

http://tspace.library.utoronto.ca