
A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING 2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND RESEARCH, PUNJAB-INDIA : A CASE STUDY

Amit Thapar¹ & K.P.S.Sengar²

¹Library and Information Assistant, National Institute of Pharmaceutical Education and Research,
Mohali, Punjab, India.

E-mail: amit.thapar@gmail.com

²Library Officer, CSIR-Institute of Microbial Technology, Chandigarh, India.

E-mail: kps@imtech.res.in

ABSTRACT

Discusses the research performance in the form of research publications of the National Institute of Pharmaceutical Education and Research (NIPER), SAS Nagar, Punjab as per the Web of Science expanded version during 2000-2009. The parameters studied include growth of publications and citations, national and international collaborations, subject-wise distribution of publications, citations, and collaboration rate, ranking of research and academic institutions, channels of communications, and major journals preferred by scientists of NIPER for publishing their research works. The findings indicate that in the ten years, NIPER produced 795 research papers (as per WOS database) and 99 filed patents and granted 17. It is quest to become world- class, NIPER researchers have been very selective in where they publish -81% of articles were published in ISI journals. The articles received an average of 16-17 citations per articles. Fourteen reviewed articles & research articles received more than 100 citations.

KEYWORDS: Scientometri, NIPER, S&T research

Introduction

National Institute of Pharmaceutical Education and Research (NIPER) is the first national level institute in pharmaceutical sciences with a proclaimed objective of becoming a centre of excellence for advanced studies and research in pharmaceutical sciences was established in 1992 at SAS Nagar,

Punjab. The Government of India has declared NIPER as an 'Institute of National Importance'. It is an autonomous body set up under the aegis of Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Government of India. The Institute is conceived to provide leadership in pharmaceutical sciences and related areas not only within the country, but also to the countries in South East Asia, South Asia and Africa. NIPER is a member of Association of Indian Universities and Association of Commonwealth Universities. The main objectives of the institute are: Toning up the level of pharmaceutical education and research by training the future teachers, research scientists and managers for the industry and profession; Continuing education programmes; Creation of National Centres to cater to the needs of pharmaceutical industries and other research and teaching institutes; Collaboration with Indian industries to meet the global challenges; Study of sociological aspects of drug 'use and abuse', and rural pharmacy, etc. NIPER's thrust areas of research are Tuberculosis, Malaria, Diabetes, Leishmaniasis and Immunomodulation.

Scientific productivity in the form of intellectual contributions and communicated in written form is commonly considered to be fundamental importance to scientific career advancement. Research productivity in higher education is gaining importance for the past two decades in India. In the last two decades, there has been an unprecedented growth of scientific studies in different fields mainly because the government and private organizations that invest large amount of money for research and development activities need accountability (Varghese & Rajan, 2009). A number of quantitative studies based on Scientometric techniques have been reported to evaluate the research productivity of individuals, institutes, countries etc. Similar studies have been undertaken on the evaluation of the research of different institutes both in India including NPL, New Delhi (Wadhwa...et al. , 2008), IIT, Kharagpur (Jeevan & Gupta, 2001), BARC, India (Kademani, B.S...et al.,2005) and abroad (Jacobs 2005).

Objective of the Study

The purpose of the study is to analyze and assess how science at NIPER has progressed over time using quantitative and qualitative indicators. The main objectives of the present study are:

- Growth and decline of research at NIPER in the main areas of its research,
- To identify the types of communication channels preferred
- Shift in the quality of NIPER research measured in terms of impact factor per paper, citations received per paper, and 'h-index'.
- To identify the pattern of international collaboration,
- To identify core areas of research, and
- To identify the prolific authors having large number of publications.

Data Source and Methodology

The study is based on raw bibliographical publication data for the period 2000-2009, extracted and downloaded from the institute's website as well from Science Citation Index-Extended version (Web of Science) of the Thomson Scientific. In this study, we have analyzed only those publications which are covered in WOS database. This database is used worldwide for mapping science because of its extensive coverage of literature from international journals, particularly India and other Asian countries is limited.

The search strategy used for collecting data for NIPER, Mohali (Table1) by general search was as follows:

DocType = All documents; Institution = Natl Inst Pharmaceut Educ & Res AND Time Span= 2000-2009 OR NIPER

The study analyses NIPER papers both quantitatively and qualitatively. For impact factor data, study used journal impact factor data provided by Thomson Scientific for the year 2010.

The patent output was obtained from Department of Intellectual Property Management, NIPER, Mohali.

The productivity of the faculties of NIPER were spread over variety of publications media like journal article, conference proceedings, patents, book chapter and PhD theses. In this study, we covered only research papers published by NIPER faculties and Research Scholars in SCI journals which were covered in Web of Science Database. The document types of research papers of the faculties of NIPER during the period under study is represented in Table 2.

Data Analysis, Results and Discussions

Publication Activity

Over the period 2000-2009, NIPER, Mohali has published 795 articles included in WOS. During that period these article received more than 13299 citations, an average of 18 citations per article (Table 3). The institute's website provide a list of publications, such as research article published in SCI and Non-SCI journals, working papers, book chapters, monographs and conference proceedings. This leads to a total of 984 external publications during the period 2000-2009. Note though that the list of external publications contains documents, such as monographs, Non-SCI journal articles, working papers etc, that are by definition not included in the WOS. In the present study, we analyzed data as per objectives of this study which were received from WOS database.

A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY

Table1: Papers by NIPER during 2000-2009

2000-2009 (Institute's website)		2000-2009 (WOS database)*	
Year	No. of papers	Year	No. of papers
2000	34	2000	21
2001	40	2001	38
2002	68	2002	55
2003	81	2003	56
2004	127	2004	102
2005	137	2005	113
2006	124	2006	93
2007	131	2007	113
2008	141	2008	106
2009	101	2009	98
Total	984	Total	795

- Used data for this study.

Table 2: Type of Literature

Document Type	Record Count	% of 795
Article	645	81.132%
Review	82	11.572%
Meeting Abstract	29	3.648%
Proceedings	16	2.013 %
Editorial Material	13	1.635 %
Letter	8	1.005 %
Correction	4	0.503 %

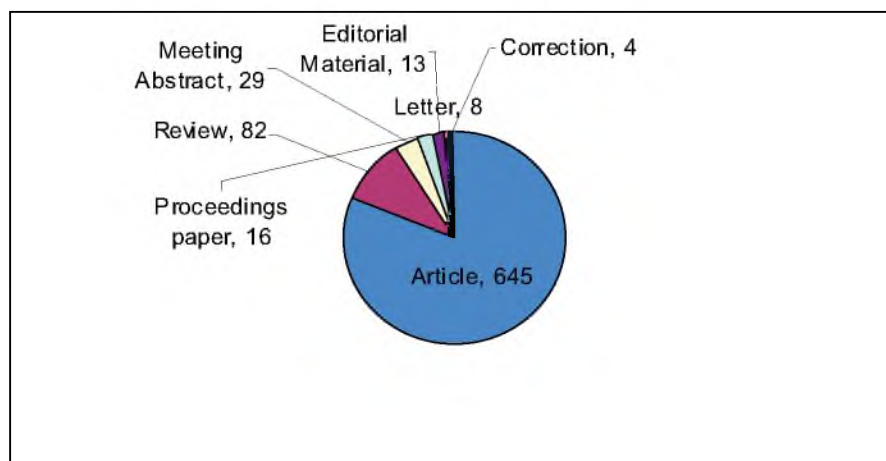


Figure 1: Type of Literature

**A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY**

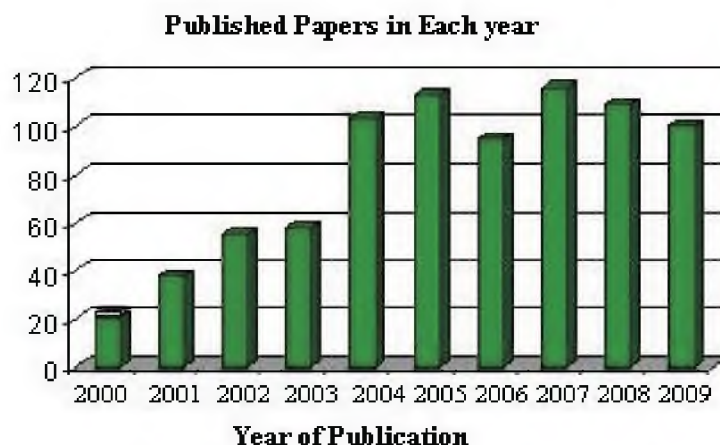


Figure 2: Published papers in each year

Citations per Paper

The bulk of Institute papers were good cited papers and some of papers have not received any single citation. During 2000-2009, article received more than 13299 citations, an average of 18 citations per article (Table 3). During 2000-2009, 74 papers out of 795 did not receive any signal citations. Papers receiving 1-10 citations each were rated low cited papers. The institute output of medium and high medium cited papers (30% papers) during this period Table 4.

Year	No. of paper	No of citation received	Average Citations perPaper	H-Index
2000	21	345	16.43	10
2001	38	1108	29.16	17
2002	55	1700	30.91	19
2003	56	1495	26.70	20
2004	102	2723	26.70	28
2005	113	1850	16.37	24
2006	93	1442	15.51	22
2007	113	1411	12.49	21
2008	106	609	5.75	12
2009	98	616	6.29	11
Total	795	13299	18.63	--

Average citation per year: **1320**;

Average citation per paper: **16.73**

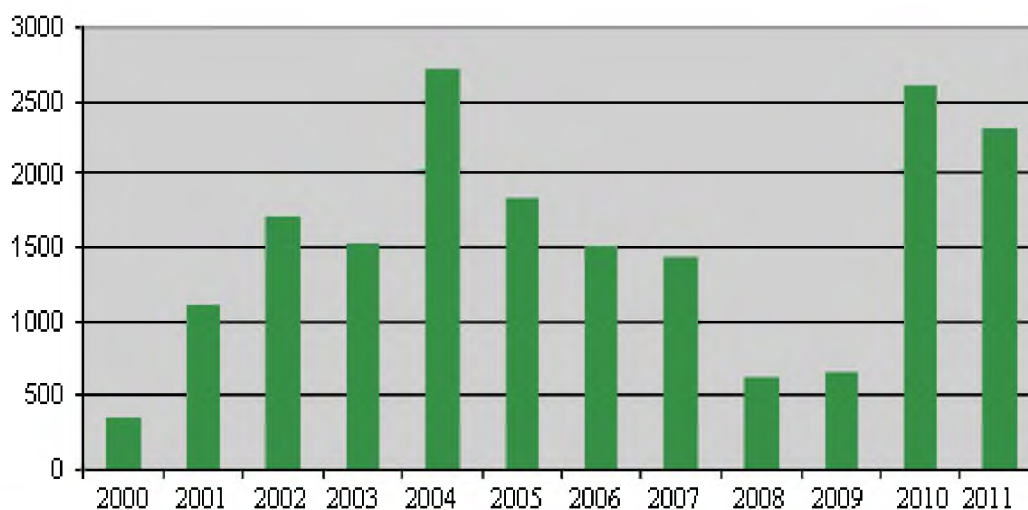


Figure 3: Citations in Each Year

Table 4: NIPER Papers Distributed by Citations Received perPaper: 2000-2009

Citations Quality	Range (Citations received per papers)	No. of papers in the given citation range
Zero Citations	0	74
Low Citations	1-10	377
Medium Citations	11-20	157
High Medium Citations	21-30	80
High Citations	31 and More	107
Total	--	795

**A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY**

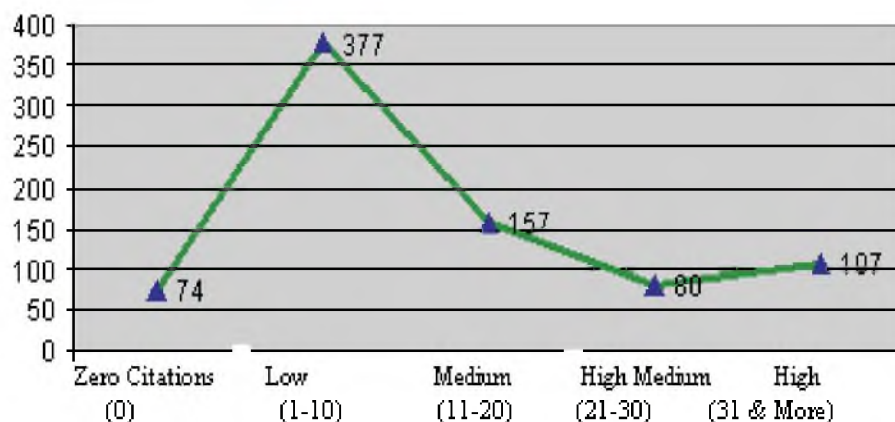


Figure 4: NIPER Papers Distributed by Citations Received per Paper: 2000-2009

High Cited Paper

The total number of 721 out of 795 papers from NIPER Faculties and researchers that have received at least one or more citations, only 20 papers received 82 and above citations. For convenience, these 20 papers may be called as high cited, of these 10 have appeared as review and 10 as articles. Six papers (30% of total) have departmental affiliation from Pharmaceutics, 5 from Pharmaceutical Technology Biotechnology, 4 from Medicinal Chemistry, 3 from Pharmacology & Toxicology and one paper each from departments of Pharmaceutical Analysis and Biotechnology. A list of most high-cited papers presented in Table 4 and Table 4.1. The table 4 and 4.1 shows that review articles have received more number of citations other than scientific articles.

Table 4: List of Top 10 Highly Cited Review Articles of NIPER 2000-2009

Author(s)	Department Affiliation	Title	Source Journal	Document Type	Total Citations *
Kumar MNVR; Muzzarelli RAA; Muzzarelli C; et al.	Pharmaceutics	Chitosan chemistry and pharmaceutical perspectives	Chemical Reviews	Review	535

Sharma, R, Chisti, Y & Banerjee, UC	Pharmaceutica l Technology Biotechnology	Production, purification, characterization, and applications of lipases	Biotechno logy Advances	Review	307
Gupta, P; Vermani, K &Garg, S)	Pharmaceutics	Hydrogels: from controlled release to pH-responsive drug delivery	Drug Discovery Today	Review	282
Banerjee, A; Sharma; (Banerjee, UC)	Pharmaceutica l Technology Biotechnology	The nitrile-degrading enzymes: current status and future prospects	Applied Microbiol ogy and Biotechno logy	Review	172
Bala, I; Hariharan, S; Kumar, MNVR	Pharmaceutics	PLGA nanoparticles in drug delivery: The state of the art	Critical Reviews <i>In</i> Therapeutic Drug g Carrier Systems	Review	165
Singh M; Sharma R; Banerjee UC	Pharmaceutical Technology Biotechnology	Biotechnological applications of cyclodextrins	Biotechno logy Advances	Review	140
Garg A; Garg S; Zaneveld LJD; et al.	Pharmaceutics	Chemistry and pharmacology of the Citrus bioflavonoid hesperidin	Phytotherapy Research	Review	137

A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY

Bakshi M; Singh S	Pharmaceutica l Analysis	Development of validated stability- indicating assay methods - critical review	Journal of Pharmace utical and Biomedical Analysis	Review	131
Pillai O; Panchagnula R	Pharmaceutics	Polymers in drug delivery	Current Opinion <i>In</i> Chemical Biology	Review	124
Ratnam D. Venkat; Ankola D. D. Bhardwaj V.; Kumar, M. N. V. Ravi et al.	Pharmaceutics	Role of antioxidants in prophylaxis and therapy: A pharmaceutical perspective	Journal of Controlled Release	Review	121

Table 4.1: List of Top 10 Highly Cited Articles of NIPER 2000-2009

Author(s)	Department affiliation	Title	Source Journal	Documen t Type	Total Citations *
Chakraborti AK; Gulhane, R	Medicinal Chemistry	Perchloric acid adsorbed on silica gel as a new, highly efficient, and versatile catalyst for acetylation of phenols, thiols, alcohols, and amines	Chemical Communi- cations	Article	148

Thiyagarajan M; Sharma SS	Pharmacology & Toxicology	Neuroprotective effect of curcumin in middle cerebral artery occlusion induced focal cerebral ischemia in rats	Life Sciences	article	107
Goyal N; Jain SC; Banerjee UC	Pharmaceutical Technology Biotechnology	Comparative studies on the microbial adsorption of heavy metals	Advances <i>In</i> Environ mental Research	Article	105
Varma MVS; Ashokraj Y; Dey CS; et al.	Biotechnology	P-glycoprotein inhibitors and their screening: a perspective from bioavailability enhancement	Pharmacological Research	Article	105
Srinivasan K; Viswanad B; Asrat L; et al.	Pharmacology & Toxicology	Combination of high-fat diet-fed and low-dose streptozotocin-treated rat: A model for type 2 diabetes and pharmacological screening	Pharmacological Research	Article	96
Bhagat Srikant; Chakraborti Asit K	Medicinal Chemistry	An extremely efficient three-component reaction of aldehydes/ketones, amines, and phosphites (Kabachnik-Fields reaction) for the synthesis of alpha-aminophosphonates	Journal of Organic Chemistry	Article	96

A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY

Chakraborti AK; Gulhane R	Medicinal Chemistry	Fluoroboric acid adsorbed on silica gel as a new and efficient catalyst for acylation of phenols, thiols, alcohols, and amines	Tetrahedron Letters	Article	82
Chakraborti AK; Gulhane R	Medicinal Chemistry	Indium(III) chloride as a new, highly efficient, and versatile catalyst for acylation of phenols, thiols, alcohols, and amines	Tetrahedron Letters	Article	76
Verma NK; Dey CS	Biotechnology	Possible mechanism of miltefosine-mediated death of Leishmania donovani	Antimicrobial Agents and Chemotherapy	Article	74
Selvam C; Jachak SM; Thilagavathi R; Chakraborti AK	Medicinal Chemistry	Design, synthesis, biological evaluation and molecular docking of curcumin analogues as antioxidant, cyclooxygenase inhibitory and anti-inflammatory agents	Bioorganic & Medicinal Chemistry Letters	Article	73

- Citations for the publications is from the date of publication till Nov. 2011 (Web of Science)

Channel of Communications

Table 5: Distribution of Journals Used for Publishing Research Papers by NIPER Faculties and Researchers (Top 50)

Source Title	Country	Number of papers	Impact factor (2010)
Aaps Pharmscitech	USA	4	1.211
Arkivoc	USA	4	1.377
Biochemical And Biophysical Research Communications	USA	4	2.595
Bioorganic Medicinal Chemistry	NETHERLAND	25	2.822
Bioorganic Medicinal Chemistry Letters	NETHERLAND	17	2.650
Bioresource Technology	UK	6	4.365
Critical Reviews In Therapeutic Drug Carrier Systems	USA	4	3.31
Current Medicinal Chemistry	UAE	5	4.63
Current Science	INDIA	4	0.782
Drug Development and Industrial Pharmacy	UK	8	1.396
Drug Discovery Today	UK	9	6.422

A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY

Enzyme and Microbial Technology	USA	5	2.287
European Journal of Medicinal Chemistry	NETHERLAND	16	3.269
European Journal of Pharmaceutical Sciences	NETHERLAND	8	3.291
European Journal of Pharmaceutics and Biopharmaceutics	NETHERLAND	9	4.304
European Journal of Pharmacology	NETHERLAND	7	2.737
Faseb Journal	USA	5	6.401
FEBS Letters	USA	4	3.601
Indian Journal of Chemistry Section B Organic Chemistry including Medicinal Chemistry	INDIA	7	0.562
Indian Journal of Pharmacology	INDIA	7	0.267
International Journal of Pharmaceutics	NETHERLAND	21	3.607
International Journal of Tuberculosis and Lung Disease	FRANCE	12	2.577
Journal of Biomedical Nanotechnology	USA	5	2.626

Journal of Chromatography B Analytical Technologies <i>In</i> The Biomedical and Life Sciences		10	2.971
Journal of Controlled Release	NETHERLAND	14	7.164
Journal of Ethnopharmacology	IRELAND	8	2.466
Journal of Medicinal Chemistry	USA	7	5.207
Journal of Molecular Catalysis A Chemical	NETHERLAND	8	2.872
Journal of Molecular Graphics Modeling		7	2.033
Journal of Nanoscience And Nanotechnology	US	6	1.435
Journal of Organic Chemistry	US	10	4.002
Journal of Pharmaceutical and Biomedical Analysis	NETHERLAND	35	2.723
Journal of Pharmaceutical Sciences	USA	8	3.031
Journal of Pharmacy and Pharmacology	UK	5	1.918
Life Sciences	NETHERLAND	12	2.451
Methods and Findings <i>In</i> Experimental and Clinical Pharmacology	SPAIN	9	1.136

A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY

Mini Reviews <i>In Medicinal Chemistry</i>	NETHERLANDS	6	2.622
Molecular Pharmaceutics	US	5	5.400
Pharmaceutical Development and Technology	US	8	1.107
Pharmaceutical Research	USA	9	4.456
Pharmacological Research	UK	17	3.612
Pharmazie	GERMANY	13	1.529
Phytotherapy Research	USA	7	1.878
Planta Medica	GERMANY	6	2.04
Process Biochemistry	UK	5	2.648
Synlett	GERMANY	11	2.447
Synthesis Stuttgart	GERMANY	10	2.26
Tetrahedron	UK	10	3.011
Tetrahedron Asymmetry	UK	6	2.484
Tetrahedron Letters	UK	16	2.618

The most productive source journal can be obtained from the table 5 which displays the rank list of journals with impact factor in which articles were published by the faculties and researchers of NIPER during the period of study.

Analysis of the impact factor of top ranking journal shows that the journals in which most number of articles published were international journal having good impact factor. It is also found that majority of the journals are published from USA.

Collaboration with Other Countries

NIPER, Mohali shows significant progress in collaborative research at international level during 2000-2009. During 2000-2009, its collaborative share with each country ranged between 0.252% and 4.025%. The top six countries with which NIPER had collaboration were USA (4.025% share), Germany (1.761% share), Israel (1.761% share), New Zealand (1.509% share), North Ireland (1.132% share) and Scotland (1.006% share) Table 6.

Table 6: NIPER's Collaboration with Different Countries

Countries/Territories	Record Count	% of 795
India	795	100%
Usa	32	4.025%
Germany	14	1.761%
Israel	14	1.761%
New Zealand	12	1.509%
North Ireland	9	1.132%
Scotland	8	1.006%
Canada	4	0.503%
England	4	0.503%
Ethiopia	4	0.503%
Ireland	3	0.377%
Japan	2	0.252%
Netherlands	2	0.252%
Switzerland	2	0.252%

Subject Profile

NIPER has published in nearly 46 disciplines (as per Web of Science database) in science and technology during 2000-2009. However, it is in 10 major disciplines that research activity of the institute has been dominating. Pharmacology Pharmacy, Chemistry, Biochemistry Molecular Biology, Biotechnology applied microbiology, Cell biology, Plant science, Biophysics, Research experimental medicine, Computer science and Neuroscience neurology are the most prominent areas of its research. Based on publication data for 2000-2009, its publications share in these 10 disciplines varied between 50.063% and 2.264 % .In additions, new and emerging areas of research for example, Parasitology, Energy fuels, Polymer Science, Food science Technology, virology and its emerging areas of research. Although the size of research activities in these area is still small ranging between 2 to 12 papers in ten years. A list of subject profile of NIPER is presented in Table 7.

Table 7: Distribution of NIPER Papers by Subject

Subject Category	No. of Papers	% of 795
Pharmacology Pharmacy	398	50.063 %
Chemistry	309	38.868 %
Biochemistry Molecular Biology	130	16.352 %
Biotechnology Applied Microbiology	44	5.535 %
Cell Biology	25	3.145 %
Plant Sciences	23	2.893 %
Biophysics	21	2.642 %
Research Experimental Medicine	21	2.642 %
Computer Science	19	2.390 %

Neurosciences Neurology	18	2.264 %
Science Technology other Topics	18	2.264 %
Engineering	17	2.138 %
Infectious Diseases	16	2.013 %
Materials Science	16	2.013 %
Physics	15	1.887 %
Respiratory System	14	1.761 %
Agriculture	13	1.635 %
Toxicology	13	1.635 %
Immunology	12	1.509 %
Microbiology	12	1.509 %
Parasitology	12	1.509 %
Integrative Complementary Medicine	11	1.384 %
Crystallography	8	1.006 %
Endocrinology Metabolism	7	0.881 %
Energy Fuels	7	0.881 %
Mathematical Computational Biology	7	0.881 %
Polymer Science	7	0.881 %

A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY

Behavioral Sciences	6	0.755 %
Cardiovascular System Cardiology	6	0.755 %
Food Science Technology	6	0.755 %
Life Sciences Biomedicine other Topics	6	0.755 %
Business Economics	4	0.503 %
Health Care Sciences Services	4	0.503 %
Physiology	4	0.503 %
Environmental Sciences Ecology	3	0.377 %
Genetics Heredity	3	0.377 %
Dermatology	2	0.252%
Developmental Biology	2	0.252%
General Internal Medicine	2	0.252%
Geriatrics Gerontology	2	0.252%
Legal Medicine	2	0.252%
Nutrition Dietetics	2	0.252%
Public Environmental Occupational Health	2	0.252%
Surgery	2	0.252%
Tropical Medicine	2	0.252%
Virology	2	0.252%

Knowledge Transfer Indicators

Number of patents (2000-2009)

Table 8: Filed and Granted Patents From year 2000-2009

Year	Patents Filed	Patents Granted
2000	--	--
2001	4	--
2002	16	1
2003	16	-
2004	7	1
2005	7	1
2006	17	7
2007	14	2
2008	10	5
2009	8	1
Total	99	18

Besides teaching and research, the promotion of economic growth is now a task of a research organization. NIPER have to translate their research finding into objects which can be profitably used or sold. During 2000-2009, NIPER have been filed 99 patens and granted 17 from US Grants (no of

A SCIENTOMETRIC STUDY OF THE RESEARCH PERFORMANCE DURING
2000-2009 OF THE NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND
RESEARCH, PUNJAB-INDIA: A CASE STUDY

patents 4), Chinese Grants (no. of patent 1) and Indian Grants (no. of patents 14). It reveals that NIPER have been successful in the area of patents.

Conclusion

This paper has highlighted qualitatively the contributions made by the faculties and researchers of NIPER, Mohali during the period 2000-2009. NIPER has produced 795 publications (as per WOS) in various subject domains. The largest numbers of publications (113) were produced in 2005 and 2007.

An issue of great concern is that the good number of the in-state papers are received medium and high citations. The quality of research measured in terms of citations per year as well per paper has shown excellent. The study also shows that good number of papers published in high impact factor journals.

The number of patents files (nine in ten years) was good than expected granted in smaller.

REFERENCES

<http://www.niper.ac.in>(Retrieved on March 5, 2011)

Jacobs, D. (n.d.). A bibliometric study of the publication patterns of scientists in South Africa 1992-96, with particular reference to status and funding. *Information Research*, 6(3). Retrieved on March 5, 2011 from <http://informationr.net/ir/6-3/paper104.html>

Jeevan V.K.J. & Gupta, B.M. (2001). R&D performance of different departments of IIT Kharagpur: A study based on research output. *Journal of Library & Information Studies*, 26(2), 130-143.

Kademani, B.S. [et al.](2005). Publication productivity of the Bio-Organic Division at Bhabha Atomic Research Centre: A Scientometric Study. *Annals of Library and Information Studies*, 5(4), .135-146

Varghese, R.R. & Rajan, J.S. (2009). Productivity of Scientists of Rajiv Gandhi Centre for Biotechnology(RGCB): An analysis. *Annals of Library and Information Studies*, 56(3), 156- 162.

Wadhwa, N.K.[et al.] (2008). Bibliometric analysis of NPL papers published during 1981- 1985 & 2001-2005: Case study. In H. Kretschmer & F. Havemann Eds., *Proceedings of the 4th International Conference on Webometrics, Informetrics and Scientometrics & COLLNET Meeting*) pp 1-10. Berlin: Humboldt- University IBI.