

CONTENT ANALYSIS OF “JOURNAL OF BIOTECHNOLOGY LETTERS”

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ABSTRACT: - *This paper attempts to highlights the quantitative assessment of status of the Journal by way of analyzing the various features of Journal “Journal of Biotechnology Letters”. During 2010-2014 a total of 1519 Articles were published in the Journal “Journal of Biotechnology Letters” by researchers in various countries.*

KEYWORDS: Authorship Pattern, International Collaboration Pattern, Communication channels.

1 INTRODUCTION

Content analysis is rapidly becoming less of a tool to be used in the experimental manipulation of the communication process. In these instances of experimental studies, systematic changes in content are made and documented through content

analysis, and the audiences are observed for the effects of these changes.

The specific role to be played by content analysis in organizing for recall the world’s store of recorded knowledge. Content analysis appears to have two general and major functions. The first is to provide the descriptive abstract of any document at a level and of such a nature as will

indicate what information may be found in it. The second is to provide guidelines in transforming document content from one medium to another and in reducing content for ease of bibliographic access.

The “Journal of Biotechnology Letters” is an international, peer-reviewed journal published monthly that aims to its readers with a unique forum for the exchange and sharing of information in social economics.

2 OBJECTIVES OF THE STUDY

The main objective of the study is to analyze the content of Journal of “World Journal of Microbiology and Biotechnology” and make the quantitative assessment of status of the Journal by way of analyzing the following features of Journal

1. To find out year-wise growth of publications,
2. To find out Geographical distribution of research output,
3. To find out the authorship and collaboration pattern in the publication,
4. To find out the extent of international collaboration,
5. To find out the most productive authors in the field,
6. To find out organization – wise distribution of publication,
7. To find out the channels of communications used by the scientists and
8. To find out the high frequency keywords appeared in the channels of communication.

3 SCOPE & LIMITATION OF THE STUDY

Scope of study is restricted to the “Journal of Biotechnology Letters” published during 2010 to 2014. The papers presented in the Journal are analyzed using content analysis technique.

The present study is limited to the total numbers of 1603 papers published during 2010 to 2014.

4 HYPOTHESIS OF THE STUDY

The study consists of following hypothesis:

1. Authorship trend is towards multiple authored papers.
2. China is the high productive country.
3. Majority of the affiliated Institution are from China.

5 ANALYSIS OF “JOURNAL OF BIOTECHNOLOGY LETTERS”

In views of the objectives of the present study, analysis of “Journal of Biotechnology Letters” is presented further (Journal of Biotechnology Letters, 2014).

5.1 YEAR-WISE PUBLICATION PRODUCTIVITY AND COLLABORATION RATE

The word publication means the act of publishing .Productivity refers to measures of output from production processes, per unit of input. Collaboration is a recursive process where two or

more people or organizations work together toward an intersection of common goals

Table 5.1: Year-Wise Publication Productivity and Collaboration Rate

Year	Single authored publication	Multi authored publication	Total no. of publication	Collaboration Rate
2010	7	270	277	0.18
2011	11	329	340	0.22
2012	1	304	305	0.20
2013	5	278	283	0.18
2014	5	309	314	0.20
Total	29	1490	1519	0.98

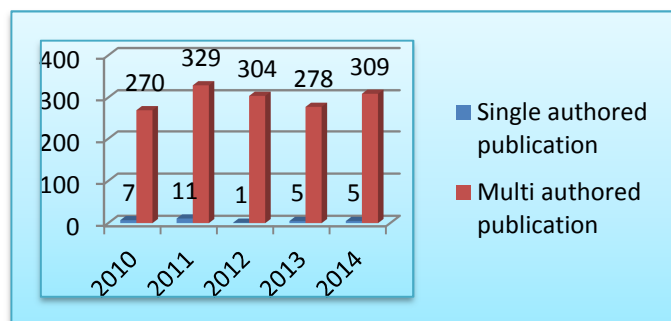


Figure 5.1: Year-Wise Publication Productivity and Collaboration Rate

It can be observed from Table No.5.1 & figure No. 5.1 that during 2010-2014 a total of 1519 Articles were published in the Biotechnology Letters by researchers in various countries.

5.2. GEOGRAPHICAL DISTRIBUTION OF RESEARCH OUTPUT

Geographical distribution of research output means the article published from different countries. In political geography and international politics, a country is a political division of a geographical entity. Frequently, but not exclusively, a sovereign territory, the term is most commonly associated with the notions of both state and nation, and also with government.

Table 5.2: Country-Wise Distribution of Articles

Sr. No.	Name of the Country	publication	Percentage (%)	Rank
1	China	3153	40.47	1
2	Korea	964	12.37	2
3	Japan	525	6.74	3
4	USA	443	5.69	4
5	India	282	3.62	5
6	China	262	3.36	6
7	UK	204	2.62	7
8	South Korea	160	2.05	8
9	Germany	156	2.00	9
10	Brazil	152	1.95	10
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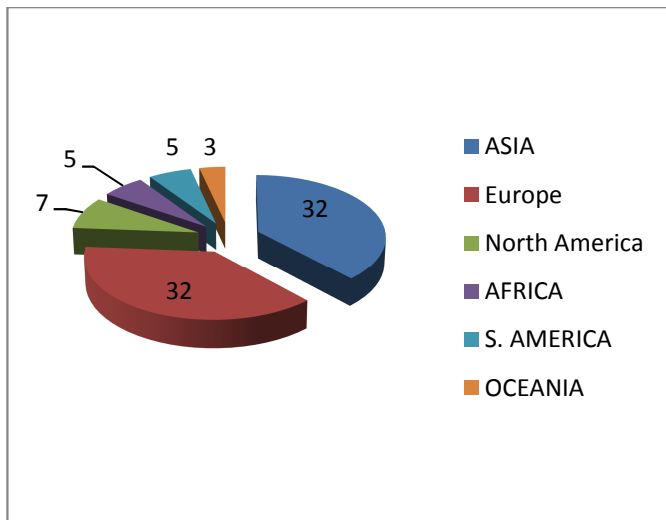


Figure 5.2: Country-Wise Distribution of Articles

It can be observed from Table No 5.2 and Figure No. 5.2 that, there were as many as 84 countries carrying out research and produced 1519 articles. Table no.2 provides ranked List of countries contributing to this field, the number of publications of each country and their share in percentages is the top producing country China with 3153 publications (40.47) of the total output.

Therefore, the hypothesis, “**China is the high productive country**” (Hypotheses No.2) is valid. It can be stated that china being the publishing country the output is more than other country. .

5.3 AUTHORSHIP AND COLLABORATION TREND:

Gupta, D.K.⁽⁴⁾ Authorship is an observable phenomenon reflecting the contemporary scholarly practices clearly showing the communication, productivity and collaborative patterns and influences among researchers even though their quantities and qualities are not well understood.

Collaboration in research is said to have taken place when 2 or more persons work together on a scientific problem of project and effort, both physical and intellectual.

Table 5.3: Authorship and Collaboration Trend

Year	Single Author	Number of papers with various authorship							Total Publication	
		2	3	4	5	6	7	8	More Than Ten	
2010	7	27	45	48	50	48	21	18	13	277
2011	11	43	45	65	55	58	29	16	18	340
2012	1	24	37	59	51	45	36	20	32	305
2013	5	16	34	56	50	50	32	17	23	283
2014	5	32	48	56	47	43	39	19	25	314
Total	29	142	209	284	253	244	157	90	111	1519
%	1.91	9.35	13.76	18.70	16.66	16.06	10.34	5.92	7.31	100

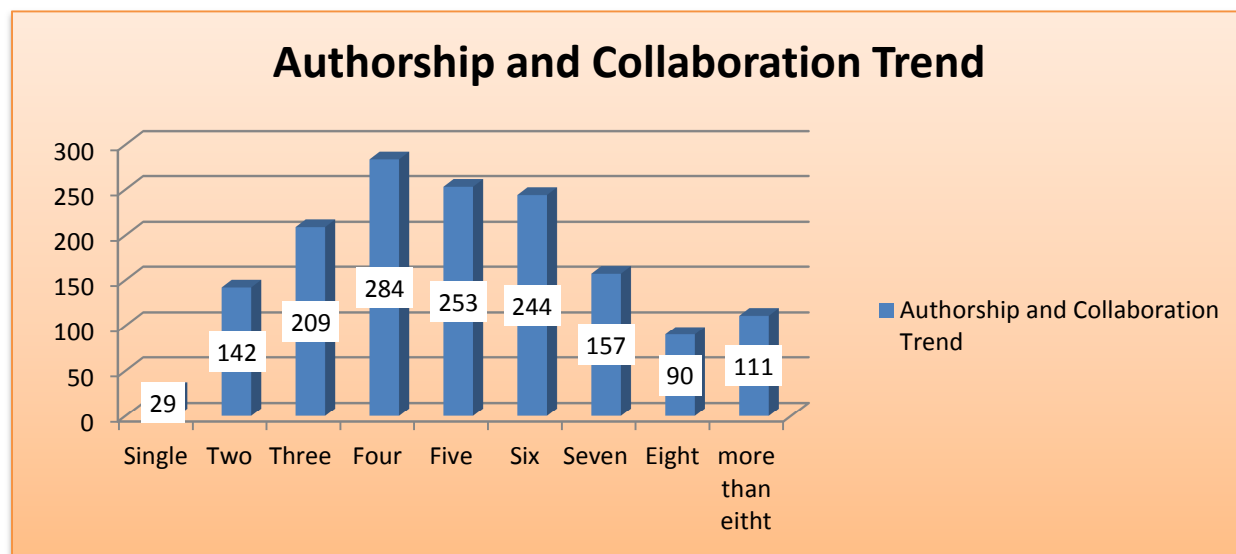


Figure No.5.3: Authorship and Collaboration Trend

It can be observed from Table No.5.3 and Figure No.5.3 that, year-wise authorship and collaboration trend is given in table 3. Authorship trend is towards multiple-authored papers. Single authored papers accounted for 29 (1.91%). Therefore, the hypothesis, “Authorship trend is towards multiple authored paper. (Hypothesis No.1) is valid

5.4 INTERNATIONAL COLLABORATION PATTERN OF ARTICLES

The International collaborative production of articles is the simultaneous action of many people who try to combine their ideas to make a new one. In fact “collaborative” is the process where two or more people work together toward a common goal and they don’t required leadership.

Table5.4: International Collaboration Pattern of Articles

Year	No. of Countries		Total No. of Publication
	Single	Collaboration	
2010	239	38	277
2011	312	28	340
2012	290	15	305
2013	278	5	283
2014	299	15	314
Total	1418	101	1519
%	93.35	6.65	100

The distribution of the collaboration of the various countries and their institutions respectively are given in the further table.

The country which has maximum collaboration is China(110), USA (84), Korea(61), Japan(35),UK(34),iran(20), Germany(19), India(18),Australia (15), Brazil(13), Italy and New Zealand(12), Austria(11), Ireland, Spain, Taiwan and Thailand(10), Finland, France, Malaysia and Slovakia(9), México and Tunisia(8), Denmark and Singapore(7), Iran and Pakistan(6), Canada and Chile (4), Scotland, Sweden and Switzerland(3), Korea, Mexico, Belgium, Colombia, Ireland and Portugal(2), European, European, Bangladesh, Costa Rica, Egypt, Hong Kong, Lithuania, Philippines, Poland, Pusan National, Russia, Slovak Republic and South Africa (one) respectively.

5.5 MOST PRODUCTIVE AUTHOR

An author is defined both as "the person who originates or gives existence to anything" and as "one who sets forth written statements" in the Oxford English Dictionary.^[24]

Table No.5.5: Most Productive Author

Sr. No.	Authors	Country	Publication	Rank
1	Deok-Kun Oh	South Korea	26	1
2	Yeong-Su Kim	Korea	14	2
3	Soo-Jin Yeom	South Korea	12	3
4	Koji Sode,	Japan	8	4
5	Chang-Su Park,	Korea	7	5

6	Christopher J. Hewitt,	UK	7	5
7	Hae-Won Kim,	South Korea	7	5
8	Jing Wang,	China	7	5
9	Yanhe Ma	China	7	5
10	Ying Lin,	China	7	5
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It can be observed from Table No. 3.6 that, the most productive authors Deok-Kun Oh (South Korea) who had the highest number (26) of the publication. One author with publication (14).one author with publication (12). One author with publication (8). Seven Authors with 7 publications, Six Authors with 12 publications and Five Authors with 21 publications. Table gives a list of Authors appeared in the articles.

5.6 INSTITUTES WISE DISTRIBUTION OF ARTICLES PUBLISHED

Institution is a society or organization for the promotion of science, education etc. ⁽⁵⁾ .An institute is a permanent organizational body created for a certain purpose. Often it is a research organization (research institution) created to do research on specific topics. An institute can also be a professional body. In some countries institutes can be part of a university or other institution of higher education, either as a group of departments or an autonomous educational institution without a classic full university status such as a University Institute.

Table 5.6: Institutes wise distribution of articles

Sr. No.	Name of the Institution	No. of Publication	Rank
1	Department of Bioscience and Biotechnology, Konkuk University, 1, Hwayang-dong, Gwangjin-gu, Seoul, 143-701, Republic of Korea	59	1
2	Divisió de Teràpies Avançades/XCELIA, Banc de Sang i Teixits, Edifici Dr. Frederic Duran i Jordà, Passeig Taulat, 116, 08005, Barcelona, Spain	31	2
3	Department of Molecular Biology, Norman Bethune College of Medicine, Jilin University, Changchun, 130021, China	23	3
4	State Key Lab of New Drug and Pharmaceutical Process, Shanghai Institute of Pharmaceutical Industry, 1320 West Beijing Road, Shanghai, 200040, China	22	4
5	State Key Laboratory of Materials-Oriented Chemical	22	5

	Engineering, College of Biotechnology and Pharmaceutical Engineering, Nanjing University of Technology, Nanjing, 210009, People's Republic of China		
6	National Academy of Agricultural Science, Rural Development Administration, Seodun-Dong, Suwon, 441-707, Korea	21	6
7	State Key Laboratory of Biocontrol, School of Life Sciences, Sun Yat-sen University, Guangzhou, 510006, People's Republic of China	21	6
8	Centro de Referencia para Lactobacilos (CERELA-CONICET)—Chacabuco 145 (T4000ILC), San Miguel de Tucumán, Argentina	20	7
9	Department of Biological Sciences, University of the Pacific, 3601 Pacific Avenue, Stockton, CA, 95211, USA	20	7
10	State Key Laboratory of Bioreactor Engineering, East China University of Science and Technology, 130 Meilong Road, Shanghai, 200237, People's Republic of China	20	7
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It can be observed from Table No. 5.6 that, there were 7990 organizations involved in research activity. The organizations that have contributed in the publication during 2010-2014 Department of Bioscience and Biotechnology, Konkuk University, 1, Hwayang-dong, Gwangjin-gu, Seoul, 143-701, Republic of Korea, 59 publication by one institutions, Divisió de Teràpies Avançades/XCELIA, Banc de Sang i Teixits, Edifici Dr. Frederic Duran i Jordà, Passeig Taulat, 116, 08005, Barcelona, Spain, 31 publication by one institutions, Department of Molecular Biology, Norman Bethune College of Medicine, Jilin University, Changchun, 130021, China, 23 publication by one institutions, the list with 24 publication followed by one institutions. Two institutions with 22 publications, Two institutions with 21 publications, 4 institutions with 20 publications, 3 institutions with 18 publications, 3 institutions with 16 publications, 5 institution with 15 Publication, 3 institution with 14 Publication, 6 institution with 13 Publication, 9 institution with 12 Publication, 14 institution with 11 publication 17 institution with 10 publication, 16 institution with 9 publication, 58 institution with 8 publication, 80 institution with 7 publication, 133 institution with 6 publication, 185 institution with 5 publication, 252 institution with 4 publication, 340 institution with 3 publication, 474 institution with 2 publication etc. and 915 institutions with Single publication. Therefore the hypothesis **“Majority of the affiliated institution are from China (Hypothesis No.3) is valid”**.

5.7 DISTRIBUTION OF LITERATURE IN VARIOUS CHANNELS OF COMMUNICATION

Channel, in communications, refers to the medium used to convey information from a sender (or transmitter) to a receiver. Researchers communicated their publication through variety of communication channels.

Table 5.7: Distribution of literature in various Channels of Communication

Channels of Communication	No. of Publication	Percentage
original Paper	1386	91.24
review	108	7.11
Erratum	21	1.38
Review and Discussion Paper	2	0.13
letter to editorial	2	0.13
Total	1519	100

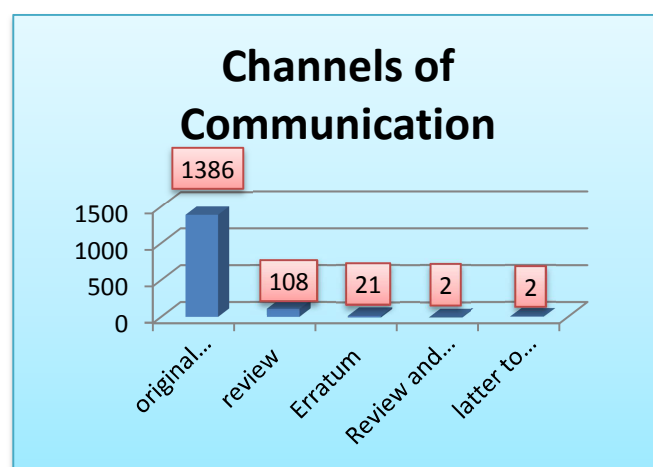


Figure No: 5.7 Distribution of literature in various Channels of Communication

It can be observed from table no. 5.7 and Figure No.5.7 that, 1386(94..24%) of the Literature was published in Biotechnology followed by Review 108(7.11%), Erratum 21(1.38%), Review and Discussion Paper 2(0.13%) and latter to editorial 2(0.13%),. The total content of Biotechnology Letters that is Biotechnology steps recovery, Biotechnology, review, erratum, Review and Discussion Paper, latter to editorial etc. is analyzed.

5.8 DISTRIBUTION OF KEYWORDS

“A word occurring natural language text of documents or its surrogate that is considered significant for indexing and information retrieval”.⁽²⁾

Keywords are the words that are used to reveal the internal structure of an author's reasoning. Keywords are one of the best scientometric indicators to understand the grasp instantaneously the thought content of the articles and to find out the growth of the subject field. By analyzing the keywords appeared either on the title or article will help in knowing in which direction the knowledge grows.

“Keyword is a word that succinctly and accurately describes the subject discussed in a document”.⁽⁶⁾

Table No.5.8: Keywords

Sr. No	Keyword	Frequency	Percentage (%)	Rank
1	Escherichia coli	40	0.53	1
2	Saccharomyces cerevisiae	40	0.53	1
3	Lipase	33	0.44	2
4	Pichia pastoris	32	0.42	3
5	Biotransformation	24	0.32	4
6	Gene expression	23	0.30	5
7	Apoptosis	20	0.26	6
8	Mesenchymal stem cells	20	0.26	6
9	Thermostability	20	0.26	6
10	Expression	19	0.25	7
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It can be observed from Table No. 5.8 that, the high frequency keywords were Escherichia coli and Saccharomyces cerevisiae (40), Lipase (33), Pichia pastoris (32), Biotransformation (24), Gene expression, (23), Apoptosis, Mesenchymal stem cells and Thermostability (20), and Expression and Immobilization (19) Table gives a list of keywords appeared in the articles.

6. CONCLUSION:

Biotechnology Letters is the world's leading rapid-publication primary journal dedicated to biotechnology as a whole - that is to topics relating to actual or potential applications

of biological reactions affected by microbial, plant or animal cells and biocatalysts derived from them. All relevant aspects of molecular biology genetics and cell biochemistry, of process and reactor design, of pre- and post-treatment steps, and of manufacturing or service operations are therefore included. Contributions from industrial and academic laboratories are equally welcome. We also welcome contributions covering biotechnological aspects of cancer, regenerative medicine and biomaterials.

The Collaboration rates of articles published per year were 0.98. The highest numbers of Articles (329) were produced in 2011 and follower that 2014 respectively. There were as many as 84 countries carrying out research and produced 1519 articles. China is the top producing country with 3153 publications (40.47) of the total output. Authorship trend is towards multiple-authored papers. Single authored papers accounted for 1.91 percent. Out of 1519 articles, 101 articles (6.65%) are written in collaboration with International Institutions. The collaboration is observed with two countries and three countries. The most productive authors are Deok-Kun Oh (South Korea) who had the highest number (26) of the publication. There were 7990 organizations involved in research activity. The organizations that have contributed in the publication during 2010-2014, Department of Bioscience and Biotechnology, Konkuk University, 1, Hwayang-dong, Gwangjin-gu, Seoul, 143-701, Republic of Korea, 59 publication

by one institutions, Researchers communicated their publication through variety of communication channels, the highest communication channels 1386(94..24%) of the Literature was published in Biotechnology. Keywords are one of the best Scientometric indicators to understand the grasp instantaneously the thought content of the articles and to find out the growth of the subject field. By analyzing the keywords appeared either on the title or article will help in knowing in which direction the knowledge grows . the high frequency keywords were Escherichia coli and Saccharomyces cerevisiae (40), Lipase (33), Pichia pastoris (32), Biotransformation (24), Gene expression, (23), Apoptosis, Mesenchymal stem cells and Thermostability (20), and Expression and Immobilization (19) Table gives a list of keywords appeared in the articles.

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