SCIENTOMETRIC ANALYSIS ON INDIAN JOURNAL OF EXPERIMENTAL BIOLOGY

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Abstract
This paper describes results of a scientometric study of 596 articles published in the Indian Journal of Experimental Biology between 2012 and 2016 are selected to observe their distribution of contributions, authorship pattern etc. A significant note of this study is most of the articles are contributed by multiple authors. The distribution of single vs. multiple author papers published between 2012 and 2016 in the IJEB. Out of the total 596 published articles, 12 articles are single authored contribution with 8.3%, while multiple authored publications had occupied the highest position with 91.7 %
Keywords: *Scientometrics, Indian Journal of Experimental Biology, Distribution of articles, Number of pages, Yearwise distribution and contribution Authorship Pattern,*

Introduction

Indian Journal of Experimental Biology started in 1963 publishes full papers, notes and reviews in various branches of biology, pharmacology, toxicology and other biological fields including instrumentation and methodology. The research articles having experimental design involving alteration and/or manipulation in biological system(s) providing insight into their functioning are considered for publication. In this Journal Review articles in frontier areas of contemporary relevance are also published. In this paper an attempt has been made to reveal the trends towards the increase and quality of research articles in Biology discipline.

Objectives: The following are the important objectives of this study.

- To examine the overall distribution pattern of contributions.
- To find out year wise distribution of the total number of pages.
- To examine year wise distribution of total number of contributions Vs total number of pages.
- To compare year wise distribution of articles and number of authors.
- To find out single vs. multiple authors publications.
- To determine the degree of collaboration.

Methodology

Indian Journal of Experimental Biology published between 2012 and 2016 has been taken for this study. The five volumes of Indian Journal of Experimental Biology for the study period consist of 596 journal articles. For each article the data were compiled, recorded, tabulated and analyzed for making observations.

Overall Distribution Pattern of Contributions

The investigation starts with the study of the overall distribution pattern of contributions. Table 1 shows the distribution pattern of contributions volume wise. 596 articles were identified for the study. The journal had been published as 'Monthly' during the period 2012 to 2016. There is no change in the periodicity of the journal.

Table 1 Overall Distribution Pattern of Contributions

S.No.	Year	Vol. No.	No. of Issues	No. of articles / contributions												Total No. of articles	% of Articles
				Issue No.													
				1	2	3	4	5	6	7	8	9	10	11	12		
1	2012	50	12	12	10	9	8	9	9	10	9	10	11	10	11	118	19.79
2	2013	51	12	10	9	10	8	9	9	10	10	11	11	23	11	131	21.98
3	2014	52	12	11	11	10	11	23	11	10	11	10	11	15	8	142	23.83
4	2015	53	12	8	8	8	8	8	14	8	8	8	8	10	8	104	17.45
5	2016	54	12	8	8	8	8	8	8	8	8	8	8	13	8	101	16.95
Total																596	100

The above table shows the highest number of articles (i.e., 142) published in the year 2014 and the lowest number of articles (i.e., 101) published in the year 2016. The percentage of articles range from 16.95 to 23.83 the analysis shows that there is gradual increase from 2012 to 2014 and gradual decrease from 2014 to 2016.

Year Wise Distribution of Total Number of Pages

The analysis aimed to identify the length or quantum of research contributions in terms of articles published in the Indian Journal of Experimental Biology. Table 2 shows the growth of the total publication pages from the year 2012 to 2016. It is observed from the data that there is an increasing as well as decreasing trend in the quantum of publication pages during the study period. From 2012 to 2014, there is a gradual increase and after 2014, there is a gradual decrease in the quantum of publication pages. The percentage of total number of pages in the year 2012 was 18.52 was increased to 24.44 in the year 2014. It is inferred from the above discussion that the growth rate of publication pages had fluctuations over issues. The issue had the highest volume of 1210 pages in the year 2014 and the lowest volume occurred in the year 2015 with 833 pages. The study revealed that the total number of pages in the articles published in the journal mainly depends upon the number of article explains the research work in detail.

Table 2 Year Wise Distribution of Total Number of Pages

S.No.	Year	Vol. No.	No. of Issues	No. of pages												Total No. of pages	% of pages
				Issue No.													
				1	2	3	4	5	6	7	8	9	10	11	12		
1	2012	50	12	86	84	72	65	71	64	68	80	74	84	84	85	917	18.52
2	2013	51	12	96	84	88	74	63	75	86	114	92	93	180	91	1136	22.94
3	2014	52	12	96	92	102	92	192	94	90	84	78	96	135	59	1210	24.44
4	2015	53	12	60	63	65	52	72	111	60	72	65	60	86	67	833	16.82
5	2016	54	12	75	80	68	67	70	60	68	61	66	61	118	62	855	17.28
Total																4951	100

Year Wise Distribution of Total Number of Contribution vs. Total Number of Pages

Table 3 compares the quantum of articles contributed with the quantum of total pages in the journal during the study period and which is supported with the average no. of pages per contribution. The analysis of the average number of pages on total contribution shows a fluctuation trend between the years 2012 and 2016. By analyzing the average number of pages on total contribution, it is found that the maximum number of average is 9 during the years 2013 and 2014. The average length of the papers published in all the issues of the journal ranged between 8 to 9 pages. In the year 2013 the average no. of pages rose to 9. The overall average number of pages for the 5 years is 8. Hence it is revealed from the table 3 that the quantum of pages published in the journal mainly depends on the number of issues published each year and during the study period there is a significant increase in the number of pages of the article published.

Table 3 Year Wise Distribution of Total Number of Contributions Vs Total Number of pages

S.No.	Year	Quantum of Contributions	Quantum of Total Pages	Average number of Page per Contribution
1	2012	118	917	8
2	2013	131	1136	9
3	2014	142	1210	9
4	2015	104	833	8
5	2016	101	855	8
Total		**596**	**4951**	**8**

Year Wise Distribution of Articles Vs Number of Authors

Table 4 indicates year wise distribution of articles vs. number of authors. The analysis found that 2586 authors have contributed 596 articles during the period between 2012 and 2016. The average number

of authors for a publication is 4.33 (Quantum of Authors / Quantum of Contribution). The lowest number of author's contribution was in the year 2016, where the number of article published was also the lowest with 101 articles. Similarly the highest number of contribution of 600 authors & 142 articles was in the year 2014. The highest average value is attained in 2013 with 4.56 %.

Table 4 Year wise distribution of articles Vs Number of Authors

S.No.	Year	Quantum of contributions	Quantum of Authors	Average number of Author per contribution
1	2012	118	499	4
2	2013	131	597	5
3	2014	142	600	4
4	2015	104	451	4
5	2016	101	439	4
Total		**596**	**2586**	**4**

Authorship Pattern of Contribution

The contribution pattern in a discipline is identified by studying the authorship pattern. The analysis of authorship pattern is made clear by the degree of research contribution by the authors. In today's world, the single research work is over looked by multiple author research.

Table 5 Year Wise Contribution of Authorship Pattern

No. of Authors	2012	2013	2014	2015	2016	Total	%
One Author	2	1	4	2	3	12	2.0
Two Authors	23	19	25	19	18	104	23.3
Three Authors	26	31	37	22	23	139	17.5
Four Authors	25	26	25	16	16	108	18.1
Five Authors	16	18	20	13	15	82	13.8
More than 5	26	36	31	32	26	151	25.3
Total	**118**	**131**	**142**	**104**	**101**	**596**	**100**

The number of contributions published by scientists in this journal is 596 articles for the study period. It is noticed that the more than five authored papers rank first in order, sharing 25.3 % of total contribution. The two-authored paper follows in order, taking 23.3 % of the total contributions. The four author's contribution stands third in order, sharing 18.1% of the total publication during the study period. The single author contributions share only 2% over the study period. The above discussion reveals that the scientists plan to take collaborative participation in research activities for various factors such as knowledge sharing, publication charges, time management etc.

Degree of Collaboration

To analyze the nature of researcher's participation in research activity, the author productivity is tested. In this content the researcher aims at analyzing the degree of collaboration on article publication by the scientists, it enables one to examine the research trends in terms of author productivity. To examine the content of research collaboration of scientists of experimental biology Subramanian's formula is adopted for the present study Nm / (Nm + Ns), where C = degree of collaboration of scientists, Nm = No. of multiple authored papers, Ns = No. of single authored papers.

Table 6 Distribution shows Single Vs Multiple Author Publication

Year	Multiple Authors (Nm)	%	Single Author (Ns)	%	Total (Nm+ Ns)	%
2012	497	19.3	2	16.7	499	19.3
2013	596	23.2	1	8.3	597	23.1
2014	596	23.2	4	33.3	600	23.2
2015	449	17.4	2	16.7	451	17.4
2016	436	16.9	3	25	439	17
Total No. of Authors	**2574**	**100**	**12**	**100**	**2586**	**100**

The above table shows that the single author total number of contribution is 12. The highest single author contribution is in the year 2014 (33.3%). The lowest single author contribution is in the year 2013 (8.3%).

Conclusion

The range of articles published per volume during the period under study is between 101 and 142. The study has examined a total of 596 articles that has been published for the period of five years (2012 – 2016). The quality of the contribution peer reviewed and quality of the selected articles published in the Indian Journal of Experimental Biology.

References

1. www.niscair.res.in/ScienceCommunication/ResearchJournals/rejour/ijeb/ijeb0.asp
2. Nattar, S. (2009) Indian Journal of Physics: A Scientometric Analysis. International Journal of Library and information Science, 5(9) 55-61 Retrieved 15 March 2014 from Http://www.acadmicjournals.org/Ijlis. DOI No: 105897/IJLIS
3. Ajiferruke, I. et al. (1988). Collaborative coefficient: a single measure of the degree of collaboration in research. Scientometrics, 14, 421-433.
4. Angadi. (2004). Scientometric portrait of Nobel laureate Leland H. Hartwell, In IS-2004, International Workshop on Webometrics, Informetrics and Scientometrics.
5. Babu, A. Ramesh and Singh, Y.P. (1998). Determinants of research productivity.Scientometrics, 43, 309-329.
6. K.G.Sudhir, "Output Science Research in Kerala: A Bibliometric Analysis", Annals of Library Science and Documentation, Vol.44 Issue No.4, 1997, 113-126.