

# **Bibliometric Analysis of Indian Journal of Biochemistry and Biophysics (IJBB): 2011-2020**

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## **ABSTRACT**

*The papers present Bibliometric study of Indian Journal of Biochemistry and Biophysics (IJBB) during the period from 2011-2020. This study analysis the different aspect of the journal with statically such as- year wise Distribution of article, issue wise Distribution of article, cumulative total of article, types of Contributions ,authorship pattern, geographical distribution of contributions, authors institutional affiliation, page lengths of the article and number of citation. It found that out of 549 articles. The maximum 85 (15.48 %) articles published in the year 2020 and the minimum 24 (4.37 %) articles published in the year 2016. During the studied period, 549 articles obtained 21449 citations, of which the highest citation 3156 (14.71 %) in 2020 and lowest 903 (4.20 %) in 2016. Out of the total number of 551 contributions, only 26 (4.71%) are contributed by single authors, while the highest contributed by more than six authors 137 (24.86%) contributions. The study furthers her finds that most of the contributions are from India (67.03%).*

**KEYWORDS:** Bibliometric, Citation Analysis, IJBB, Biochemistry, Biophysics, CSIR-NISIR.

## **INTRODUCTION**

One of the ways of producing scientific information and distributing it to those concerned is writing scientific articles. The way the topics are handled and their content, and the responsibility of always guiding the researchers, are a part of the work of producing the article. To that end, the orientations of the study topics in the articles are important. Studies that study this aspect of research produced are Bibliometric studies. (Omer Faruk -2020). Providing information about the strengths and weaknesses of the research area also contributes to the researcher. "In Bibliometric researches, certain features of documents or publications are analyzed, and various findings related to scientific communication are obtained" (Patra, Bhattacharya & Verma (2006).

## **BIBLIOMETRIC**

The term “Bibliometric” was first used by Alan Pritchard in 1969. Bibliometric is statistical analysis of written publication, such as books or articles. Bibliometric Methods are frequently used in the field of library and information science, including Scientometrics. It involves the analysis of a set of publications characterized by bibliographic variables such as author (s), the place of publication, the associated sub keywords, and the citations. It serves as a useful tool to the academic community to identifying most popular authors and potential publications. Bibliometric studies have helped librarians to use their meager resources in judicious selection of journals and other periodicals for their users.

In 1948, the great library scientist, S.R. Ranganathan, coined the term “Librametry”, which historically appeared first and was intended to streamline the services of librarianship. Bibliometric is analogous to Ranganathan’s librametrics, the Russian concept scientometrics, infometrics, and sub disciplines like econometrics, psychometrics, sociometrist, biometrics, techno metrics, chemo metrics, and climacterics, where mathematics and statistics are applied to study and solve problems in their respective fields. Scientometrics is now used for the application of quantitative methods to the history of science and overlaps with bibliometric to a considerable extent. (Thanuskodi, 2010)

**Definition:** According to **Paul Outlet in 1934** as “*The measurement of all aspects related to the publication and reading of books and documents.*” According to **Alan Pritchard in 1969** as “*The application of mathematics and statistical methods to books and other media of communication*” <https://en.wikipedia.org/wiki/Bibliometrics>

## **CSIR-NISCAIR**

National Institute of Science Communication and Information Resources (NISCAIR) came into existence on 30 September 2002 with the merger of National Institute of Science Communication (NISCOM) and Indian National Scientific Documentation Centre (INSDOC). Both NISCOM and INSDOC, the two premier institutes of the Council of Scientific and Industrial Research (CSIR), were devoted to dissemination and documentation of S&T information. NISCOM had been in existence for the last six decades (first as two Publication Units of CSIR, which were merged to form the Publications Division, which was later renamed as Publications & Information Directorate and in 1996, as NISCOM). Over the years, NISCOM diversified its activities, and through a host of its information products, comprising research and popular science journals, encyclopedic publications, monographs, books, and information services, it had been reaching out to researchers, students, entrepreneurs, industrialists, agriculturists, policy planners and also the common man. INSDOC came into being in 1952 and was engaged in providing S&T information and documentation services through myriad activities such as abstracting and indexing, design and development of databases, translation, library automation, providing access to international information sources, human resource development, consultancy services in setting up modern library-cum-information centers. INSDOC was also host to the National Science Library and the SAARC Documentation Centre. Now, with the formation of NISCAIR, all the above multi-faceted activities have been amalgamated, making NISCAIR, an institute capable of serving the society using modern IT infrastructure in a more effective manner and taking up new ventures in the field of science communication, dissemination and S&T information management systems and services. Broadly the

core activity of NISCAIR will be to collect/store, publish and disseminate S&T information through a mix of traditional and modern means, which will benefit different segments of society.

CSIR-NISCAIR Full text facility is provided for all nineteen (19) research journals viz. ALIS, AIR, BVAAP, IJBB, IJBT, IJCA, IJCB, IJCT, IJEB, IJEMS, IJFTR, IJMS, IJNPR, IJPAP, IJRSP, IJTK, JIPR, JSIR & JST. NOPR also hosts three Popular Science Magazines viz. Science Reporter (SR), Vigyan Pragati (VP) & Science Ki Duniya (SKD) and a Natural Products Repository (NPARR).

## **INDIAN JOURNAL OF BIOCHEMISTRY AND BIOPHYSICS (IJBB)**

Indian Journal of Biochemistry and Biophysics (IJBB) started in 1964. The Journal of Indian Journal of Biochemistry and Biophysics (IJBB) is a bimonthly peer-viewed scientific journal that publishes original articles and rapid communications by Indian and other researchers, spanning topics in the Biochemistry and Biophysics. This journal publishes original research articles in the following areas: structure-function relationships of biomolecules; biomolecular recognition, protein-protein and protein-DNA interactions; gene-cloning, genetic engineering, genome analysis, gene targeting, gene expression, vectors, gene therapy; drug targeting, drug design; molecular basis of genetic diseases; conformational studies, computer simulation, novel DNA structures and their biological implications, protein folding; enzymes structure, catalytic mechanisms, regulation; membrane biochemistry, transport, ion channels, signal transduction, cell-cell communication, glycobiology; receptors, antigen-antibody binding, neurochemistry, ageing, apoptosis, cell cycle control; hormones, growth factors; oncogenes, host-virus interactions, viral assembly and structure; intermediary metabolism, molecular basis of disease processes, vitamins, coenzymes, carrier proteins, toxicology; plant and microbial biochemistry; surface forces, micelles and micro emulsions, colloids, electrical phenomena, etc. in biological systems. Solicited peer reviewed articles on contemporary Themes and Methods in Biochemistry and Biophysics form an important feature of IJBB. The Indian Journal of Biochemistry and Biophysics (IJBB) is now distributed in print and online in India Published by the National Institute of Science Communication and Information Resources (CSIR). The frequency of the journal is given below: 1999- 2020: One volume per year.

The present study is a Bibliometric analysis of selected The Indian Journal of Biochemistry and Biophysics (IJBB) published by NISCIR during 2011 to 2020. The study analyzes the different aspect of the journal with statically such as- year wise Distribution of article, issue wise Distribution of article, Types of Contributions ,cumulative total of article, authorship pattern, geographical distribution of contributions, State wise distribution of article, authors", page lengths of the article and total number of Cited Documents etc.

## **REVIEW OF LITERATURE**

The Literature review is the significant part of a research, which gives an idea about the previous studies and insights towards the possibilities of the present study. Some preferred literature reviewed for the present study. Like Barik (2019), Kanagaraj (2015), Kashyap, Santu Ram (2018), Das, D. (2020), Kuri, R. & Palled, S. (2016) , Khan, I (2015). All referred papers documents acknowledged in references.

## **OBJECTIVES**

The present study has been undertaken with the following objectives:

- ❖ To classify the number of contributions published during the period of study;
- ❖ To find out the year-wise distribution of contributions;
- ❖ find out the issue-wise distribution of contributions
- ❖ To study the authorship pattern;
- ❖ To classify geographical distribution of contributions;
- ❖ To study the number citation
- ❖ To study length of articles.

## **SCOPE AND LIMITATIONS**

The scope of the present study is limited to the selected the Indian Journal of Biochemistry and Biophysics (IJBB) published by NISCIR during 2011 to 2020. The study limits to only 549 articles, 10 volume, 53 issue published during 10 years in the study. The limitation of the Study are that it does not consider any other journals of Indian Journal of Biochemistry and Biophysics.

## **METHODOLOGY**

Methodology applied in the present study is Bibliometric analysis which is used to study in detail the Bibliographic features of the articles and citation analysis of reference appended at the end of each article published in the selected Indian Journal of Biochemistry and Biophysics (IJBB) during 2011 to 2020. The data pertaining Indian Journal of Biochemistry and Biophysics (IJBB) regarding 549 articles made from volume number 48 in 2011 to volume number 57 in 2020.

The details with regard to each published article such as number of articles in each issue of the journal, Types of Contributions, number of authors, name of authors, place of authors, number of references and their forms, geographical distribution, number of pages, etc., were recorded and analyzed for making observations. The data were collected; organized and analyzed using MS-Excel spreadsheets. The recorded data was tabulated for analysis. The tables and graphs were generated in accordance with the objectives of the study.

## **DATA ANALYSIS AND INTERPRETATION**

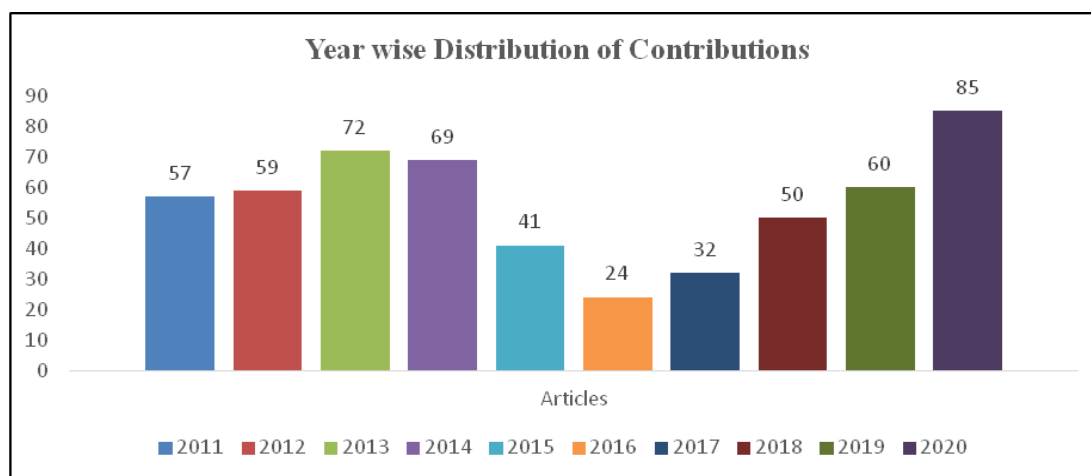
### **Year wise Distribution of Contributions**

From the **table number 1**, it was found that a total 549 of contributions (*articles, research papers, short communication, review, note etc.*) have been published in the ten (10) volumes of IJBB during the period of study i.e. from the year 2011 to 2020. On an average the journal has published 54 research papers per year. The table shows that the maximum number of contributions/research papers 85 (15.48 %) were published in the year 2020 while the minimum 24 (4.37 %) in the year 2016.

**Table No. 1:** Year wise Distribution of Contributions

Year	Vol. No.	No. of Issues	No. of Articles	% age
2011	48	6	57	10.38 %
2012	49	6	59	10.74 %
2013	50	6	72	13.11 %
2014	51	6	69	12.56 %
2015	52	4	41	7.46 %
2016	53	3	24	4.37 %
2017	54	4	32	5.82 %
2018	55	6	50	9.10 %
2019	56	6	60	10.92 %
2020	57	6	85	15.48 %
Total	10	53	549	100 %

**Graph: 1** Year wise Distribution of Contributions



### Issue wise Distribution of Contribution

The **table number 2** reveals that the maximum number of contributions/research papers 20 have been published in the October issue of Volume No. 57 followed by 18 in October issue of Volume No. 51, 17 in October issue Volume No. 50, 16 in August issue Volume No. 57 and 14 in December and April issue of Volume No. 56 & 57 respectively, while the sixth place is occupied by the February issues of Volume No. 52 & 57, April issue of Volume No. 52, June issues of Volume No. 57, October issue of Volume No. 49 with 13 contributions each. The lowest position is occupied by the February-April issue of Volume No. 53, June-August issue Volume No. 52, October issue of Volume No. 54 publishing only 7 contributions each.

**Table No. 2:** Issue wise Distribution of Contribution

Issue	Volume No.										Total	% age
	48	49	50	51	52	53	54	55	56	57		
February	9	8	10	10	13	-	-	9	10	13	82	14.93
Feb.- April	-	-	-	-	-	7	8	-	-	-	15	2.73
April	8	9	9	10	13	-	-	9	10	14	82	14.93
June	11	9	12	10	-	-	-	8	8	13	71	12.93
June- August	-	-	-	-	7	8	9	-	-	-	24	4.37
August	10	10	12	10	-	-	-	8	9	16	75	13.66
October	10	13	17	11	-	-	7	8	9	20	95	17.30
October- Dec	-	-	-	-	8	9	-	-	-	-	17	3.09
December	9	10	12	18	-	-	8	8	14	9	88	16.02
Total	57	59	72	69	41	24	32	50	60	85	549	100

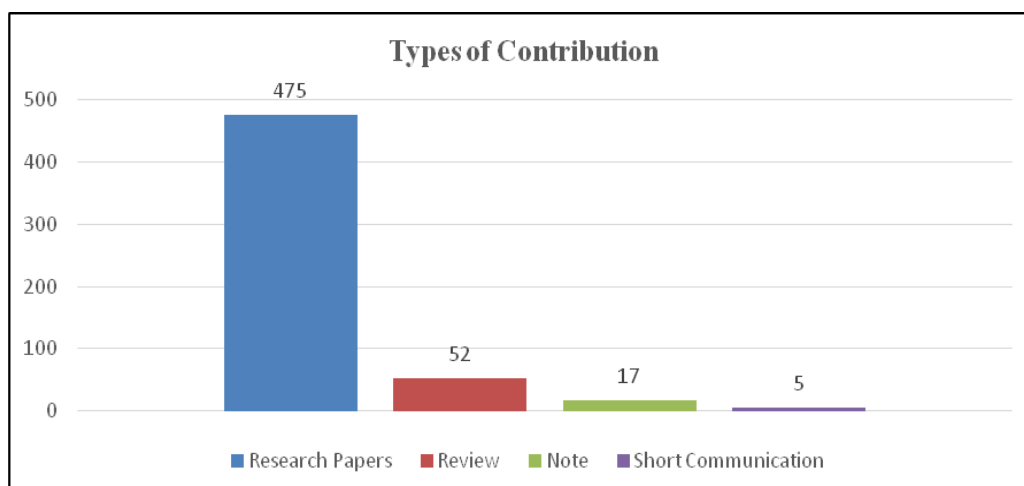
### Types of Contributions

On an analysis of the **table number 3**, it was found that out of the total contributions of 549, research papers attained the top position of publications totaling 475 (86.52 %) followed by reviews 52 (9.47%), notes 17 (3.09 %) and short communications 5 (0.91%) . It appears that IJBB gives maximum importance to the original research papers for the purpose of publishing

**Table No. 3** Types of Contributions

Year	Vol. No.	Type of Contribution			
		Research Papers	Review	Note	Short Communication
2011	48	45	7	5	--
2012	49	49	6	3	1
2013	50	65	5	1	1
2014	51	53	13	3	--
2015	52	39	--	2	--
2016	53	24	--	--	--
2017	54	31	1	--	--
2018	55	47	3	--	--
2019	56	55	4	1	--
2020	57	67	13	2	3
<b>Total</b>		475	52	17	5
<b>% age</b>		86.52 %	9.47 %	3.09 %	0.91 %

**Graph: 2** Types of Contribution

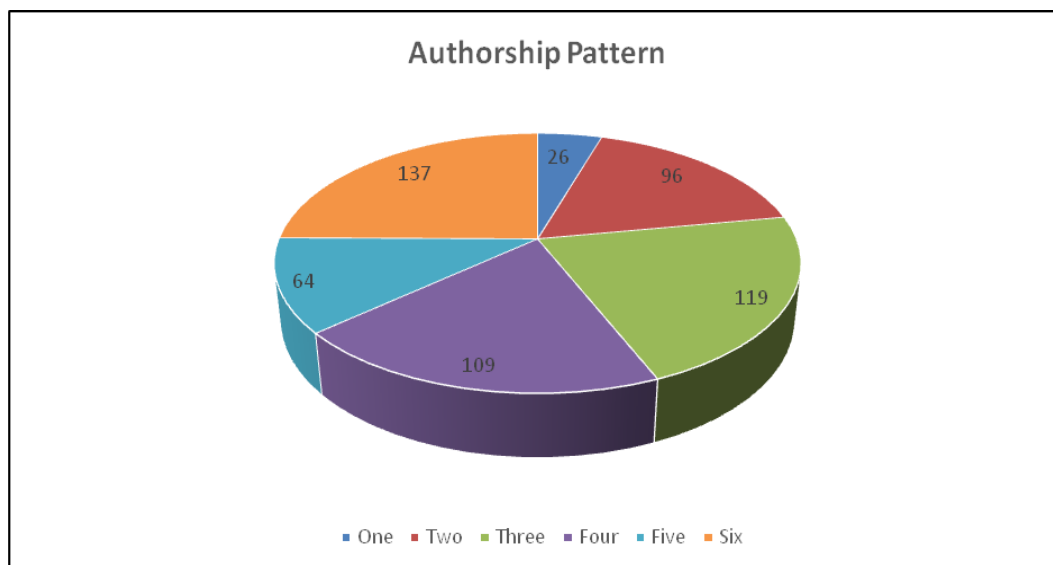


**Authorship Pattern**

On an analysis of the Table number 4 which is related year wise authorship pattern show that out of 551 contributors.26 (4.71%) Articles were contributed by single authors, 96 (17.42%) contributions by two authors, 119 (21.59%) contributions by three authors, 109 (19.78%) contributions by four authors, 64 (11.64%) contributions by five authors and more than six authors contribution 137 (24.86%).

**Table No. 4:** Authorship Pattern

Year	Vol. No.	Number of Authors Contributed						Total
		One	Two	Three	Four	Five	Six	
2011	48	4	11	16	12	3	11	57
2012	49	5	6	15	11	6	16	59
2013	50	5	12	12	14	8	21	72
2014	51	3	15	17	10	7	17	69
2015	52	0	4	8	8	4	17	41
2016	53	1	6	3	5	4	5	24
2017	54	2	4	5	9	3	9	32
2018	55	0	10	11	10	7	12	50
2019	56	1	8	11	15	11	14	60
2020	57	5	20	21	15	11	15	87
<b>Total</b>		<b>26</b>	<b>96</b>	<b>119</b>	<b>109</b>	<b>64</b>	<b>137</b>	<b>551</b>
<b>%</b>		<b>4.71%</b>	<b>17.42%</b>	<b>21.59%</b>	<b>19.78%</b>	<b>11.61%</b>	<b>24.86%</b>	

**Graph: 4** Number of Authors Contributed**Geographical Distribution of Contributions**

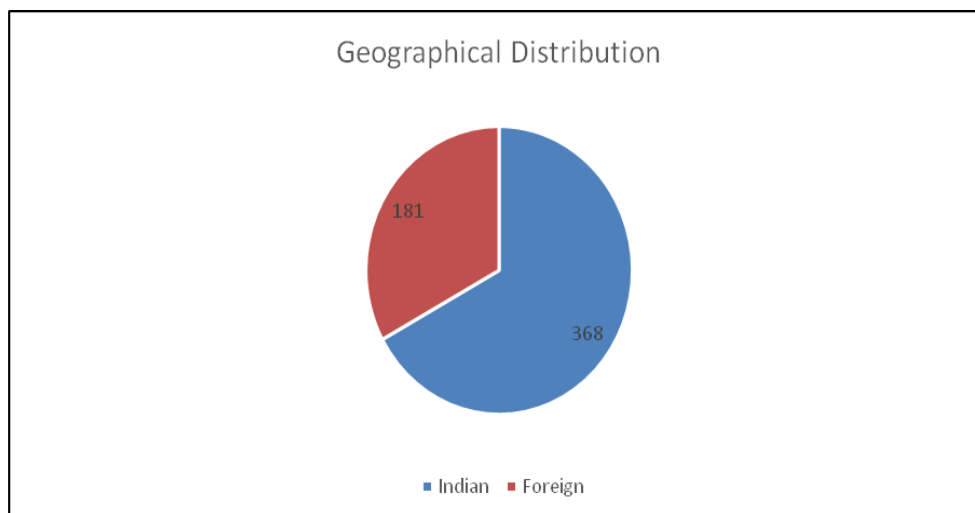
The **Table number 5** shows that the maximum number of contributions during the period of study are from India with a total of 368 (67.03 %) while the remaining 181 (32.96 %) are foreign. The maximum foreign contributions (35) are found to be in the volume number 50 of the year 2013.

**Table No. 5:** Geographical Distribution of Contributions:

Year	Vol. No.	Geographical Distribution	
		Indian	Foreign
2011	48	36	21
2012	49	40	19
2013	50	37	35
2014	51	41	28
2015	52	27	14
2016	53	20	4
2017	54	19	13
2018	55	43	7
2019	56	40	20
2020	57	65	20
Total		<b>368</b>	<b>181</b>
%		<b>67.03 %</b>	<b>32.96 %</b>



**Graph: 4:** Geographical Distribution of Contributions



**Geographical Distribution of Contributions:**

On an analysis of the **Table number 6** it was found that out of the total contributions (549) during the period of study, India acquired the top position with 368 contributions (67.03%) followed by China with only 53 (9.65 %) contributions , Turkey with 21 (3.82 %) contributions and USA with 14 (2.55 %) contributions only.

**Table No. 6:** Geographical Distribution of Contributions (Country wise)

Sr. No.	Country	No. of Contributions	%age
1	India	368	67.03 %
2	China	53	9.65 %
3	Turkey	21	3.82 %
4	USA	14	2.55 %
5	Iran	10	1.82 %
6	Egypt	10	1.82 %
7	Korea	8	1.45 %
8	Canada	7	1.27 %
9	Saudi Arabia	6	1.09 %
11	America	4	0.72 %
12	Malesia	4	0.72 %
13	Brazil	4	0.72 %
14	Czech Republic	4	0.72 %
15	Serbia	4	0.72 %
16	Germany	4	0.72 %
17	Mexico	4	0.72 %
18	Japan	3	0.54 %
19	Poland	3	0.54 %
20	Russia	2	0.36 %

21	Tunisia	2	0.36 %
22	Iraq	2	0.36 %
23	Netherland	2	0.36 %
24	Pakistan	1	0.18 %
25	Sri Lanka	1	0.18 %
26	Australia	1	0.18 %
27	Greece	1	0.18 %
28	France	1	0.18 %
29	Slovenia	1	0.18 %
30	Indonesia	1	0.18 %
31	Ukraine	1	0.18 %
32	Nigeria	1	0.18 %
33	Romania	1	0.18 %
Total		549	100

### Total No. of Citations

The **table-number 7** Show the year wise cited Documents by the authors of the IJBB. It Indicates that the highest 3156 (14.71 %) Document cited in the year 2020 Followed by 3088 (14.39%), 2769 (12.90%) Document cited in the year 2013, Document cited in the year 2011 & 2012 respectively 2177 (10.14%) 2308(10.76%) and lowest citation 903 (4.20%) Document cited in the year 2016.

**Table No. 7:** Total No. of Citations

Year	Vol. No.	No. of Articles	No. of Citation	%age of citation	Cumulative No. Of Citation	%age of Cumulative Citation
2011	48	57	2177	10.14 %	2177	10.14 %
2012	49	59	2308	10.76 %	4485	20.91 %
2013	50	72	2769	12.90 %	7254	33.82 %
2014	51	69	3088	14.39 %	10342	48.21 %
2015	52	41	1439	6.70 %	11781	54.92 %
2016	53	24	903	4.20 %	12684	59.13 %
2017	54	32	1409	6.56 %	14093	65.70 %
2018	55	50	1903	8.87 %	15996	74.57 %
2019	56	60	2297	10.70 %	18293	85.28 %
2020	57	85	3156	14.71 %	21449	100 %
<b>Total</b>		549	21449	100 %		

**Length of Contributions**

The data Analysis the Table-number 8 Show that the 1-5 pages 105 (19.12%) articles have the length , the 6-10 pages, 384 (69.94%) articles have the length of pages, the 11-15 pages 57 (10.38 %) articles have the length of the pages, the 16-20 page 3 (0.54%) articles have the length of the pages.

**Table No. 8:** Length of Contributions:

Year	Vol. No.	Length of Contributions (No. of Pages)				Total
		1-5	6-10	11-15	16-20	
2011	48	17	37	3	00	57
2012	49	16	39	4	00	59
2013	50	12	54	6	00	72
2014	51	8	53	8	00	69
2015	52	5	30	6	00	41
2016	53	4	15	5	00	24
2017	54	3	22	5	2	32
2018	55	13	34	3	00	50
2019	56	13	39	8	00	60
2020	57	14	61	9	1	85
<b>Total</b>		<b>105</b>	<b>384</b>	<b>57</b>	<b>3</b>	<b>549</b>
<b>%</b>		<b>19.12 %</b>	<b>69.94 %</b>	<b>10.38 %</b>	<b>0.54 %</b>	

**FINDINGS AND CONCLUSION**

The present study observes the publication of 549 contributions in the IJBB journal during the period of study. The study shows a trend of growth in contributions published during the year 2011 to 2020 with an average number of contributions 54 per volume of the journal. The maximum number of contributions/research papers (85) were found to be published in the year 2020 while the minimum (24) in the year 2016. The study reveals that IJBB gives maximum importance to the original research papers for the purpose of publishing, which attained top position of publications with a total of 475 (86.52%). The maximum number of contributions during the period of study are from more than six authors with a total of 137 (24.86%). The study further finds that most of the contributions are from India 368 (67.03%). IJBB has free online access through Internet and is the highly preferred journal for communication by the Science professionals. The journal has great potential of attaining new of popularity and impact all over the world in the field of Science and technology (Biochemistry and Biophysics) provided it starts publishing high quality papers contributed by foreign authors too.

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