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Examination of Literature in the Subject of Food Allergy

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ABSTRACT

Presents a bibliometric examination of the literature in the subject of food allergy as listed the MEDLINE data which concealed in the PubMed for the length of period i.e. 2002-2021.It is noticed that a total of 24571 records which are concealed on 'Food allergy'. It became revealedthat a total of 37.15% of records are journal articles. Relative Growth Rate (RGR) has been reducing from the year 2002 to 2021 but in awavering trend. On the other hand, the Doubling Time (Dt) has shown an increasing trend, but it is also in a waveringof records throughout the examine period.A total of 189 journals were recognized as primary journals in the subject of food allergy literature. The ratio of single and multiple authors publications is 1:9 found within the subjectof food allergy literature. The meager percent i.e. 0.82% of records represent nameless authorship. The average Degree of Collaboration arrived at 0.90. It displays that multi-authored papers ruledwithin the field of food allergy literature.

Keywords: Food allergy, Relative Growth Rate (RGR), Doubling time (Dt), Bradford Law and Degree of Collaboration

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1. INTRODUCTION

Bibliometrics is a division of education in Library and Information Science and lots of educationsis being carried out for anarithmetical study of the several aspects of literature of a given subject. The aim of this paper is to examinethe growth of literature, to recognize the primary journals and to study the authorship pattern in the subject of food allergy literature.

A food allergy is an abnormal immune response to food. The symptoms of the allergic reaction may range from mild to severe. They may include itchiness, swelling of the tongue, vomiting, diarrhea, hives, trouble breathing, or low blood pressure.[1]

There are a lot of records that are being published within the subject of food allergy. In thosesituations, it is requiredto examinequantitatively the output of literature via making use of bibliometric strategies i.e. Relative Growth Rate (RGR), Doubling time (Dt), Bradford Law and Degree of Collaboration. It helps to examine the growth rate, to identify the primaryjournalsand authorship pattern of literature in the subject of Food allergy.

2. Review of Literature

The clearfeature of science in present years has been its rate of growth.Growth studies in differentsubjects studied by Baker[2] in chemistry, Conard[3] in biology, May[4] and Lamb[5] in mathematics, Sengupta in microbiology[6], physiology[7,] biochemistry[8]and Ramesh Babu and Ramakrishnan in Hepatitis[9].

There are number of investigation on mapping and Bradford law in health sciences. Schloman[10]considered mapping the literature of allied health. Kundra[11] studied the behaviour of Bradford's Law towards citation data on Indian Medical Journal.Ramesh Babu and Ramakrishnan[12]measured on Indian contributions to the field of Hepatitis. Lewin[13] studied on Diabetes mellitus publication patterns from 1984 – 2005. Krishnamoorthy, Ramakrishnan and Devi[14]considered the bibliometric Analysis of literature on diabetes (1995-2004); the aim of the study was to identify the primary journals and the growth rate in the field of diabetes.

Enormous numbers of investigation are carried out to examinethe author collaboration output of contributions. Macias-Chapula analyzed the patterns of the growth in AIDS literature[15]. Hartinahet…al1[16] studied on nutrition problems in Indonesia, and discussed the authorship pattern. Divya Srivastava[17] studied the concept of collaboration and the technique accompanied in studying research collaboration in the field of Biomedical Sciences in India.

3. Objectives of the Study

The Aims of this study are:

1. To examine the growth of literature onfood allergy.
2. To become aware of the primary journals in the area of food allergy literature.
3. To observe the level of authorship pattern in food allergy literature.

4. Methodology

The records published during the year 2002 to 2021 within the discipline of food allergyliteraturein the MEDLINE data which can be covered in the PubMed was searched and bibliographic details like author, title, publication type, language, year, address, country, source etc. have been accumulated.The saved records had been loaded inSPSSfor the reason of this analysis.The records became analyzed in terms of growth rate,primary journals and also to examine the authorship pattern in the subject of food allergy literature.

In order to determine the growth rate, the bibliometric strategies like Relative Growth Rate (RGR)[18-19] and Doubling time (Dt)[20]were used. Bradford[21] Law used to study the primary journals in field of Food allergy. Degree of Collaboration (DC)[22] used to study the single and multi-authored papers of literature in the subject of food allergy. The keyword 'Food allergy' has been used for extracting the number of records available within the above said database.

4. Food Allergy Research Productivity

The research productivity on 'Food allergy' concealed in the database is shown in Table 1. It is recognized that overall of 24571 records are included in the field of Food allergy literature.The year-wise distribution of literature on 'Food allergy' according to source database, it is found that the supreme number of records (2248) was published during the year 2021, followed by 2168records in the year 2019 and 1952records in the year 2020. On the total, it is noticed that there are wavering of records of Food allergy research productivity. (Fig.1).

Table 1: Literature published in 'Food allergy' Year-wise

Years	Records on Food allergy	Percentage	Cumulative Percent
2002	646	2.6	2.6
2003	665	2.7	5.3
2004	676	2.8	8.1
2005	763	3.1	11.2
2006	717	2.9	14.1
2007	776	3.2	17.3
2008	892	3.6	20.9
2009	851	3.5	24.4
2010	932	3.8	28.2
2011	1048	4.3	32.4
2012	1162	4.7	37.1
2013	1432	5.8	43.0
2014	1412	5.7	48.7
2015	1494	6.1	54.8
2016	1491	6.1	60.9
2017	1544	6.3	67.2
2018	1702	6.9	74.1
2019	2168	8.8	82.9
2020	1952	7.9	90.9
2021	2248	9.1	100
Total	**24571**	**100**	

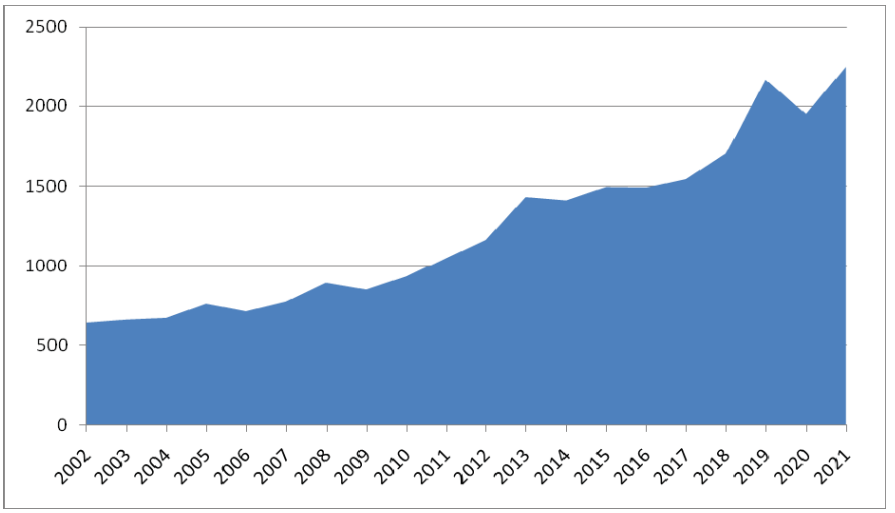

Figure-1: Literature published in 'Food allergy' Year wise

5.1. Publication Types of Dissemination in food Allergy research

Table 2 reveals the dissemination of the 'Food allergy' studies output according to various publication types of MEDLINE.It was found that 37.15% are journal articles,Research Support, Non-U.S. Gov't 24.19%, Review 21.71%, Letter4.99%, Research Support, N.I.H., Extramural1.99%, Editorial1.63%, Systematic Review1.16%, Randomized Controlled Trial1.01%, Research Support, U.S. Gov't, Non-P.H.S. 0.96%, Case Reports 8 0.64%,Multicenter Study0.53%, News0.48%, Observational Study0.44%, Introductory Journal Article0.40%, Research Support, N.I.H., Intramural0.37 and Other Publication Types1.46% are covered in this study. (Fig.2)

Table 2: Publication Types of Dissemination infood allergy Research

Publication Type	Total	%
Journal Article	9129	37.15
Research Support, Non-U.S. Gov't	5944	24.19
Review	5334	21.71
Letter	1226	4.99
Research Support, N.I.H., Extramural	489	1.99
Editorial	400	1.63
Systematic Review	284	1.16
Randomized Controlled Trial	248	1.01
Research Support, U.S. Gov't, Non-P.H.S.	235	0.96
Research Support, U.S. Gov't, P.H.S.	221	0.90
Case Reports	158	0.64
Multicenter Study	131	0.53
News	117	0.48
Observational Study	107	0.44
Introductory Journal Article	99	0.40
Research Support, N.I.H., Intramural	90	0.37
Other Publication Types	359	1.46
Total	**24571**	**100.00**

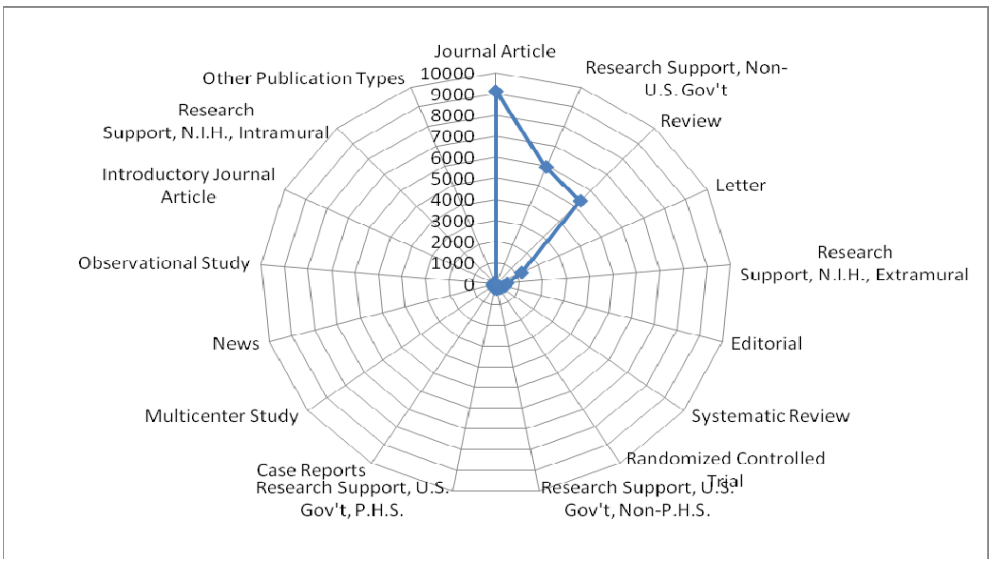

Figure 2 Publication Types of Dissemination in Food allergy Research

5.2. Growth Rate of the Literary Productivity in Food Allergy

The analysis of data on the literary productivity in food allergy has been executed with parameters such as Relative Growth Rate (RGR) and Doubling Time (Dt).It is seen from Table-3 that RGR has been reducing from 2003 (0.707745) to 2021 (0.095952) however wavering trend in the course of the study period.On the other hand, the Doubling Time (Dt) has proven an growing, but it also in wavering trend throughout the study period. The data in Table-3 reveals that "Doubling time (Dt)" has increased from 0.979166in the year 2003 to 7.222349in the year 2021 but in the wavering trend (Fig.4).

Table 3: RGR and Dt for food allergy Research output by Year-wise

Year	No. of Output	Cumulative No. of Output	W_1	W_2	$1-2^{\overline{R}^{(aa^{-1}\ year^{-1})}}$ RGR	Dt(a)
2002	646	646		6.4708		
2003	665	1311	6.4708	7.178545	0.707745	0.979166
2004	676	1987	7.178545	7.594381	0.415836	1.666521
2005	763	2750	7.594381	7.919356	0.324975	2.13247
2006	717	3467	7.919356	8.151045	0.231689	2.991079
2007	776	4243	8.151045	8.353026	0.201981	3.431018
2008	892	5135	8.353026	8.543835	0.190809	3.631902
2009	851	5986	8.543835	8.697179	0.153344	4.51926
2010	932	6918	8.697179	8.841882	0.144703	4.78912
2011	1048	7966	8.841882	8.982938	0.141056	4.912951
2012	1162	9128	8.982938	9.119102	0.136164	5.089455
2013	1432	10560	9.119102	9.264829	0.145727	4.755482
2014	1412	11972	9.264829	9.390326	0.125497	5.52205
2015	1494	13466	9.390326	9.507923	0.117597	5.892994
2016	1491	14957	9.507923	9.612935	0.105012	6.599265
2017	1544	16501	9.612935	9.711176	0.098241	7.054062
2018	1702	18203	9.711176	9.809342	0.098166	7.059493
2019	2168	20371	9.809342	9.921868	0.112526	6.158599
2020	1952	22323	9.921868	10.01337	0.091505	7.573372
2021	2248	24571	10.01337	10.10932	0.095952	7.222349

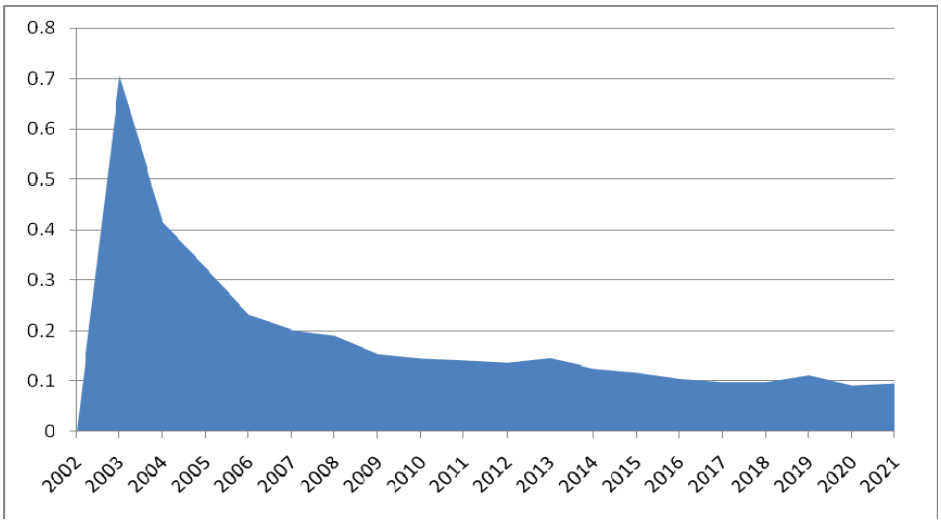

Figure 3: Relative Growth Rate for Research Output in Food allergy

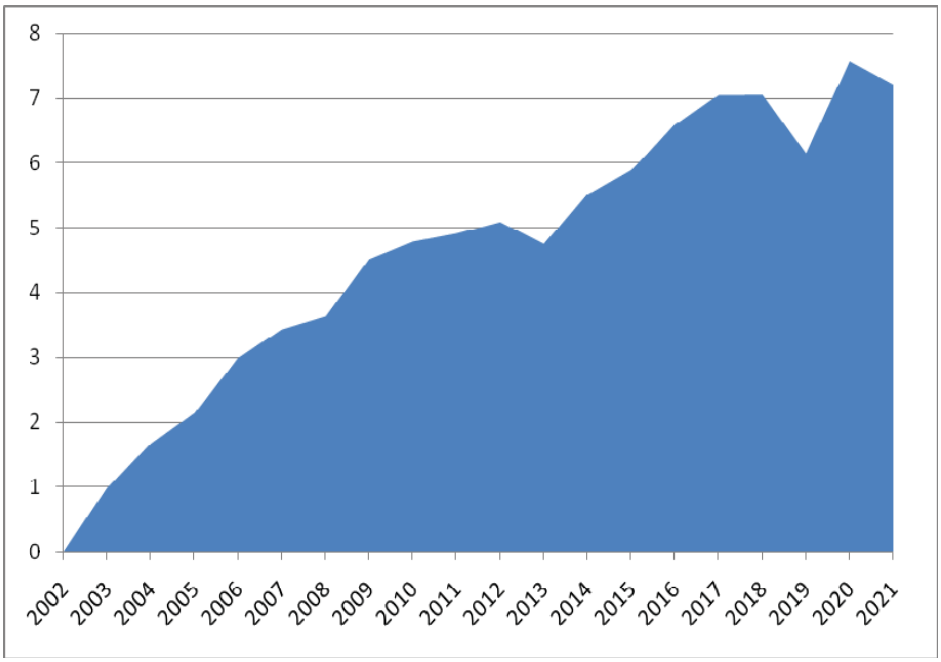

Figure 4: Doubling time for Research output in Food allergy

5.3. Journals in Food Allergy Based on Bradford Law

Based on the Bradford Law, the journals are grouped into three zones producing similar number of records. The journals by zone-wise is presented in the Table-4. It is seen from Table-4 that 15 journals grouped in zone-1 published 3071journal articles accounting for one third of the overall output. In addition the second one quarter contains of 174 journals published3143 journal articles and 1495journals published 2915 journal articles grouped in third zone. A total of 189 Journalshave been coveredin the Zone-1 and Zone-2 turned into identified as primary journals within the areaof Food allergy literature. (Figure 5)

Table 4: Dissemination by Zone of cited journals and references in Food allergy

Zone	No. of Journals		No. of Journal articles		Cumulative No. of Journal articles
	No.	%	No.	%	
Zone-1	15	0.89	3071	33.64	3071
Zone-2	174	10.33	3143	34.43	6214
Zone-3	1495	88.78	2915	31.93	9129
Total	**1684**	**100.00**	**9129**	**100.00**	

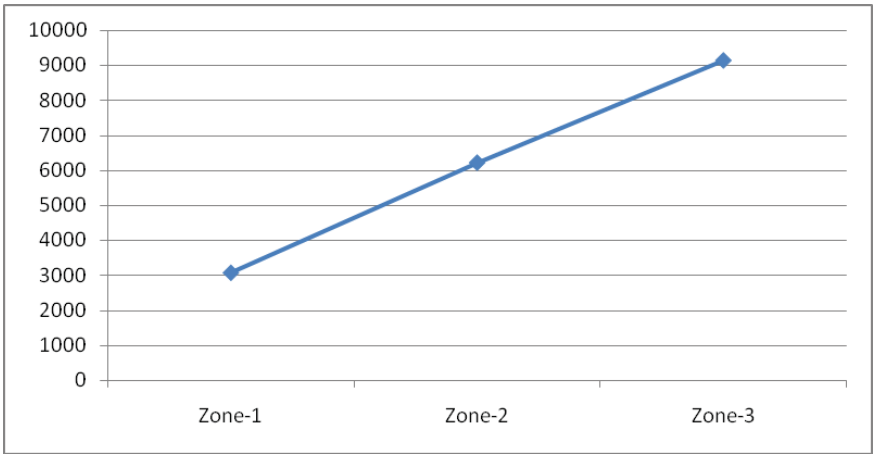

Figure 5: Disseminations of Journals by Zones

5.5. Primary Journals in Food Allergy research

The journals based on the studies output on 'Food allergy' for the year 2002-2021 are given in Table-5. The highly usefulprimaryjournals which present in the Zone-1and Zone-2 of Bradford Law of Scattering are presented below:

Table 5: Primary Journals in food allergy Research

S.No.	Name of the Journal	No. of Records	%
1.	The Journal of Allergy and Clinical Immunology	496	5.43
2.	Allergy	412	4.51
3.	Pediatric Allergy and Immunology	305	3.34
4.	Annals of Allergy, Asthma & Immunology	301	3.30
5.	Clinical and Experimental Allergy	288	3.15
6.	The Journal of Allergy and Clinical Immunology. In Practice	275	3.01
7.	International Archives of Allergy and Immunology	165	1.81
8.	AllergologiaEt Immunopathologia	135	1.48
9.	Journal of Investigational Allergology& Clinical Immunology	131	1.43
10.	Journal of Agricultural and Food Chemistry	129	1.41
11.	Nutrients	108	1.18
12.	Current Opinion in Allergy and Clinical Immunology	88	0.96
13.	Food Chemistry	81	0.89
14.	Allergy and Asthma Proceedings	79	0.87
15.	AllergologyInternational	78	0.85
16.	Arerugi = [Allergy]	77	0.84
17.	Plos One	77	0.84
18.	Current Allergy and Asthma Reports	76	0.83
19.	Food and Chemical Toxicology	73	0.80
20.	European Annals of Allergy and Clinical Immunology	71	0.78
21.	Allergy, Asthma, and Clinical Immunology	63	0.69

S.No.	Name of the Journal	No. of Records	%
22.	The World Allergy Organization Journal	63	0.69
23.	Frontiers in Immunology	60	0.66
24.	Clinical and Translational Allergy	59	0.65
25.	Journal of Pediatric Gastroenterology and Nutrition	57	0.62
26.	Molecular Nutrition & Food Research	56	0.61
27.	Pediatrics	40	0.44
28.	Asia Pacific Allergy	39	0.43
29.	Immunology and Allergy Clinics of North America	38	0.42
30.	Molecular Immunology	38	0.42
31.	Contact Dermatitis	37	0.41
32.	ActaPaediatrica (Oslo, Norway : 1992)	36	0.39
33.	Allergy, Asthma & Immunology Research	36	0.39
34.	RevistaAlergiaMexico	36	0.39
35.	Critical Reviews in Food Science and Nutrition	35	0.38
36.	Journal of AOAC International	35	0.38
37.	Asian Pacific Journal of Allergy and Immunology	34	0.37
38.	Scientific Reports	34	0.37
39.	The Journal of Pediatrics	33	0.36
40.	Archives De Pediatrie	31	0.34
41.	Clinical Reviews in Allergy & Immunology	31	0.34
42.	Journal of Immunology (Baltimore, Md. : 1950)	31	0.34
43.	Food & Function	30	0.33
44.	Archives of Disease in Childhood	27	0.30
45.	Gastroenterology	25	0.27
46.	Journal of Asthma and Allergy	25	0.27
47.	Regulatory Toxicology and Pharmacology : RTP	25	0.27
48.	Journal of Food Science	24	0.26
49.	The New England Journal of Medicine	24	0.26
50.	Foods (Basel, Switzerland)	23	0.25
51.	Journal of the European Academy of Dermatology and Venereology : JEADV	23	0.25
52.	Journal of the Science of Food and Agriculture	23	0.25
53.	Bioscience, Biotechnology, and Biochemistry	22	0.24
54.	Iranian Journal of Allergy, Asthma, and Immunology	22	0.24
55.	Methods in Molecular Biology (Clifton, N.J.)	22	0.24
56.	Journal of Paediatricsand Child Health	20	0.22
57.	World Journal of Gastroenterology	20	0.22
58.	Clinical and Molecular Allergy : CMA	19	0.21
59.	International Journal of Immunopathology and Pharmacology	19	0.21
60.	International Journal of Molecular Sciences	19	0.21
61.	PostepyDermatologii I Alergologii	19	0.21
62.	ZhonghuaErKeZaZhi = Chinese Journal of Pediatrics	19	0.21
63.	BMJ (Clinical Research Ed.)	18	0.20
64.	Der Hautarzt; ZeitschriftFur Dermatologie, Venerologie, Und	18	0.20

S.No.	Name of the Journal	No. of Records	%
	VerwandteGebiete		
65.	Digestive Diseases and Sciences	18	0.20
66.	Journal of Food Protection	18	0.20
67.	NederlandsTijdschriftVoorGeneeskunde	18	0.20
68.	The American Journal of Gastroenterology	18	0.20
69.	The British Journal of Nutrition	18	0.20
70.	Expert Review of Clinical Immunology	17	0.19
71.	Food Research International (Ottawa, Ont.)	17	0.19
72.	Frontiers in Pediatrics	17	0.19
73.	Italian Journal of Pediatrics	17	0.19
74.	Clinical Gastroenterology and Hepatology	16	0.18
75.	Mucosal Immunology	16	0.18
76.	Veterinary Dermatology	16	0.18
77.	Current Opinion in Pediatrics	15	0.16
78.	European Journal of Pediatrics	15	0.16
79.	MMW FortschritteDer Medizin	15	0.16
80.	Analytical and Bioanalytical Chemistry	14	0.15
81.	Annals of Nutrition & Metabolism	14	0.15
82.	International Immunopharmacology	14	0.15
83.	Pediatrics International	14	0.15
84.	The British Journal of Dermatology	14	0.15
85.	The Cochrane Database of Systematic Reviews	14	0.15
86.	VoprosyPitaniia	14	0.15
87.	AnnalesDe Dermatologie Et De Venereologie	13	0.14
88.	Australian Family Physician	13	0.14
89.	Clinical Infectious Diseases	13	0.14
90.	Food Additives & Contaminants. Part A, Chemistry, Analysis, Control, Exposure &	13	0.14
91.	Immunity, Inflammation and Disease	13	0.14
92.	International Forum of Allergy & Rhinology	13	0.14
93.	International Journal of Environmental Research and Public Health	13	0.14
94.	Journal of Clinical Gastroenterology	13	0.14
95.	Medicina (Kaunas, Lithuania)	13	0.14
96.	Molecules (Basel, Switzerland)	13	0.14
97.	The Journal of Asthma	13	0.14
98.	The Medical Journal of Australia	13	0.14
99.	AllergoJournal International	12	0.13
100	Child Health Alert	12	0.13
101	Nature	12	0.13
102	Pediatric Annals	12	0.13
103	The Journal of Family Health Care	12	0.13
104	ZhongguoDang Dai ErKeZaZhi = Chinese Journal of Contemporary Pediatrics	12	0.13
105	Annals of the New York Academy of Sciences	11	0.12
106	BMJ Open	11	0.12

S.No.	Name of the Journal	No. of Records	%
107	Chemical Immunology and Allergy	11	0.12
108	Clinical and Experimental Dermatology	11	0.12
109	Current Gastroenterology Reports	11	0.12
110	Current Opinion in Immunology	11	0.12
111	Frontiers in Pharmacology	11	0.12
112	Gut	11	0.12
113	JAMA Pediatrics	11	0.12
114	Journal of Gastroenterology and Hepatology	11	0.12
115	Journal of Nutritional Science and Vitaminology	11	0.12
116	Journal of the American Academy of Dermatology	11	0.12
117	Minerva Pediatrica	11	0.12
118	PolskiMerkuriuszLekarski : Organ PolskiegoTowarzystwaLekarskiego	11	0.12
119	The Journal of Dermatology	11	0.12
120	The Journal of Nutrition	11	0.12
121	Children (Basel, Switzerland)	10	0.11
122	Dermatitis : Contact, Atopic, Occupational, Drug	10	0.11
123	Diseases of the Esophagus	10	0.11
124	Environmental Health Perspectives	10	0.11
125	Frontiers in Allergy	10	0.11
126	Gastroenterology Clinics of North America	10	0.11
127	Journal of Allergy	10	0.11
128	Journal of Ethnopharmacology	10	0.11
129	Journal of Medicinal Food	10	0.11
130	MedycynaWiekuRozwojowego	10	0.11
131	Nestle Nutrition Workshop Series. PaediatricProgramme	10	0.11
132	Neurogastroenterologyand Motility	10	0.11
133	Pediatric Dermatology	10	0.11
134	Public Health Nutrition	10	0.11
135	Recent Patents on Inflammation & Allergy Drug Discovery	10	0.11
136	Scandinavian Journal of Gastroenterology	10	0.11
137	The Israel Medical Association Journal : IMAJ	10	0.11
138	UgeskriftFor Laeger	10	0.11
139	ActaDermato	9	0.10
140	AllergologieSelect	9	0.10
141	Asia Pacific Journal of Clinical Nutrition	9	0.10
142	Biomed Research International	9	0.10
143	BMJ Case Reports	9	0.10
144	European Journal of Clinical Nutrition	9	0.10
145	European Journal of Dermatology : EJD	9	0.10
146	European Journal of Pharmacology	9	0.10
147	Indian Journal of Dermatology	9	0.10
148	International Journal of Biological Macromolecules	9	0.10
149	Jama	9	0.10
150	Journal of Dairy Science	9	0.10

S.No.	Name of the Journal	No. of Records	%
151	Journal of the American College of Nutrition	9	0.10
152	Pediatric Clinics of North America	9	0.10
153	Pediatric Pulmonology	9	0.10
154	PrzegladLekarski	9	0.10
155	School Nurse News	9	0.10
156	The European Respiratory Journal	9	0.10
157	The Journal of Clinical Investigation	9	0.10
158	The Proceedings of the Nutrition Society	9	0.10
159	Advances in Experimental Medicine and Biology	8	0.09
160	Alimentary Pharmacology & Therapeutics	8	0.09
161	AllergieEt Immunologie	8	0.09
162	American Journal of Physiology. Gastrointestinal and Liver Physiology	8	0.09
163	BMC Veterinary Research	8	0.09
164	Cells	8	0.09
165	Clinical and Experimental Immunology	8	0.09
166	Comprehensive Reviews in Food Science and Food Safety	8	0.09
167	Digestive and Liver Disease	8	0.09
168	EFSA Journal. European Food Safety Authority	8	0.09
169	Evidence	8	0.09
170	Expert Review of Gastroenterology &Hepatology	8	0.09
171	Human Vaccines &Immunotherapeutics	8	0.09
172	Immunology Letters	8	0.09
173	Immunotherapy	8	0.09
174	Journal Der DeutschenDermatologischenGesellschaft= Journal of the German	8	0.09
175	Journal of Immunological Methods	8	0.09
176	Journal of Proteomics	8	0.09
177	Lakartidningen	8	0.09
178	Lancet (London, England)	8	0.09
179	Nihon Rinsho. Japanese Journal of Clinical Medicine	8	0.09
180	Nutrition (Burbank, Los Angeles County, Calif.)	8	0.09
181	Pediatric Research	8	0.09
182	The American Journal of Clinical Nutrition	8	0.09
183	The American Journal of Emergency Medicine	8	0.09
184	The Australasian Journal of Dermatology	8	0.09
185	Toxicology Letters	8	0.09
186	Vaccine	8	0.09
187	Veterinary Immunology and Immunopathology	8	0.09
188	Wei Sheng Yan Jiu = Journal of Hygiene Research	8	0.09
189	World Journal of Pediatrics : WJP	8	0.09

5.6. Authorship Pattern of Research Output of Food Allergy Literature

The authorship pattern of investigation output of food allergy literature is offered in the Table-6. The multi-authored papers witnessed the major percentage. A complete of 89.4% of publications is

written by multiple authors. The ratio of single and multiple authors publications is 1:9 found within the field of food allergy literature. However, it was visible that meager percent i.e. 0.82% of records represent anonymous authorship. The high occurrence by means of more than one authors' publications is the phenomenon of scientific research. (Figures-6 and 7).

Table 6: Single Vs Multi Authored publications in Food allergy Research

Year	Single Authored		Multi Authored		Anonymous		Total	%
	records	%	records	%	records	%		
2002	140	5.83	491	2.24	15	7.43	646	2.6
2003	136	5.66	515	2.34	14	6.93	665	2.7
2004	110	4.58	554	2.52	12	5.94	676	2.8
2005	133	5.53	614	2.80	16	7.92	763	3.1
2006	127	5.29	574	2.61	16	7.92	717	2.9
2007	107	4.45	658	3.00	11	5.45	776	3.2
2008	132	5.49	749	3.41	11	5.45	892	3.6
2009	122	5.08	719	3.27	10	4.95	851	3.5
2010	111	4.62	817	3.72	4	1.98	932	3.8
2011	128	5.33	907	4.13	13	6.44	1048	4.3
2012	117	4.87	1035	4.71	10	4.95	1162	4.7
2013	117	4.87	1307	5.95	8	3.96	1432	5.8
2014	134	5.58	1271	5.79	7	3.47	1412	5.7
2015	142	5.91	1342	6.11	10	4.95	1494	6.1
2016	137	5.70	1345	6.12	9	4.46	1491	6.1
2017	103	4.29	1434	6.53	7	3.47	1544	6.3
2018	118	4.91	1577	7.18	7	3.47	1702	6.9
2019	112	4.66	2050	9.33	6	2.97	2168	8.8
2020	96	4.00	1849	8.42	7	3.47	1952	7.9
2021	81	3.37	2158	9.82	9	4.46	2248	9.1
Total	**2403**	**100.00**	**21966**	**100.00**	**202**	**100.00**	**24571**	**100**

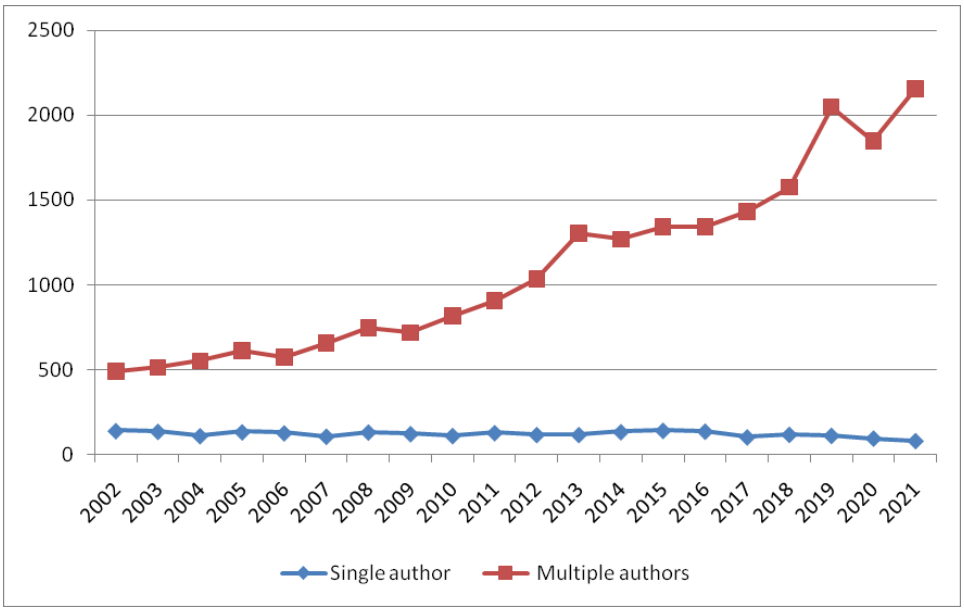

Figure 6: Single Vs. Multi authored publications in Food allergy Research

5.7. Degree of Collaboration in Food allergy Research

The Degree of Collaboration by year-wise is presented inTable-7. The Degree of Collaboration in the field of food allergy literature has been measured with the help of the formula created by K. Subramaniam. Consequently, the Degree of Collaboration has been taken into consideration for the year 1991 is as follows:

$$C = \frac{491}{491 + 140} = \frac{491}{631} = \text{Degree of Collaboration } 0.78$$

Correspondingly, the Degree of Collaboration is considered for every year and presented in Table-7. It is visible from the table that the year-wise Degree of Collaboration indicates the ratio in-between 0.78 to 0.96 in the study of the degree of collaboration in the subject of food allergy literature. (Fig.7) At the identical time the year-wise Degree of Collaboration falls more than 0.5 and exposed that the more than one authors' papers are ruled within the field of food allergy literature. The average Degree of Collaboration arrived at 0.90.

Table 7: Degree of Collaboration in Food allergy Research

Year	Single author	Two authors	Three Authors	Four Authors	Five Authors	More than Five authors	Anonymous	Total	More than one author	Degree of Collaboration
2002	140	96	76	81	72	166	15	646	491	0.78
2003	136	104	83	99	57	172	14	665	515	0.79
2004	110	111	85	85	89	184	12	676	554	0.83
2005	133	124	109	94	83	204	16	763	614	0.82
2006	127	105	82	88	76	223	16	717	574	0.82
2007	107	110	109	90	95	254	11	776	658	0.86
2008	132	136	104	98	99	312	11	892	749	0.85
2009	122	141	104	108	94	272	10	851	719	0.85
2010	111	128	104	120	106	359	4	932	817	0.88
2011	128	151	121	108	108	419	13	1048	907	0.88
2012	117	190	120	129	140	456	10	1162	1035	0.90
2013	117	193	194	172	152	596	8	1432	1307	0.92
2014	134	181	145	152	154	639	7	1412	1271	0.90
2015	142	176	174	190	151	651	10	1494	1342	0.90
2016	137	183	166	185	167	644	9	1491	1345	0.91
2017	103	166	185	146	177	760	7	1544	1434	0.93
2018	118	214	179	186	190	808	7	1702	1577	0.93
2019	112	242	222	219	225	1142	6	2168	2050	0.95
2020	96	175	205	207	252	1010	7	1952	1849	0.95
2021	81	163	205	257	256	1277	9	2248	2158	0.96
Total	**2403**	**3089**	**2772**	**2814**	**2743**	**10548**	**202**	**24571**	**21966**	**0.90**

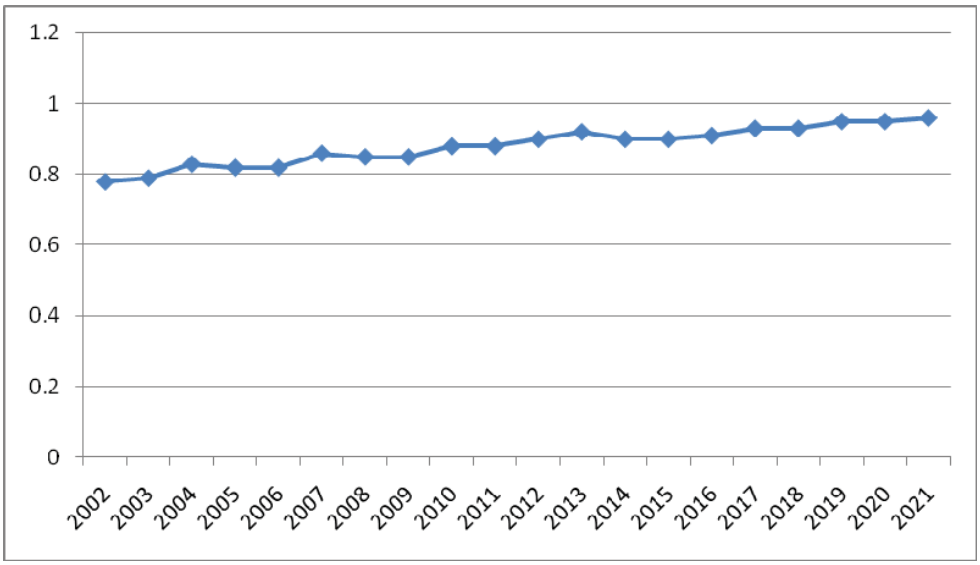

Figure-7: Degree of Collaboration in Food allergy Research

6. MAJOR FINDINGS

- A total of 24571 records are covered in the field of food allergy literature.
- It was observed that 37.15% records are covered journal articles.
- Relative Growth Rate (RGR) has been decreasingbut wavering trend.
- Doubling Time (Dt) has shown an increasing, but it is also in a wavering trend.
- A complete of 189 Journals had been recognized asprimary journals within the area offood allergy literature.
- A complete of 89.4% of publications is written by more than one author.
- The ratio of single and multiple authors publications is 1:9observed in the discipline of food allergy literature.
- The meager percent i.e. 0.82% of records represent anonymous authorship.
- The average Degree of Collaboration arrived at 0.90. It shows that multi-authored papers ruled in the field of food allergy literature.

7. CONCLUSION

The results were confirmed thatwavering of records on food allergy research productivity. The supremenumbers of records had been included by journal articles in the field of food allergy literature. Primary journals were recognized in the discipline of food allergy literature. Additional the research productivity of food allergy confirms the implications of Bradford's Law of Scattering. The average Degree of Collaboration arrived at 0.90. It suggests that multi-authored papers dominated within the subject offood allergy literature.

8. REFERENCES

1. Available at: https://en.wikipedia.org/wiki/Food allergy
2. Baker, D., 1976, Recent trends in the growth of chemical literature, *Chemical and Engineering News.* 54, 23-27.
3. Conard, G.M., 1957, Growth of biological literature and the future of biological abstracts, *Federal Proceedings.* 16, 711-715.
4. May, K O., 1966, Quantitative growth of the mathematical literature, *Science.* 154, 1672-1673.
5. Lamb, G.H., 1971, The coincidence of quality and quantity in the literature of mathematics. (Ph.D. dissertation, CaseWestern ReserveUniversity), *Dissertation Abstracts International,* 32/06-A, 33-40.
6. Sengupta, I.N., 1973, Recent growth of the literature of biochemistry and changes of ranking of periodicals, *Journal of Documentation*. 29, 192-211.
7. Sengupta, I.N., 1974, Choosing physiology journals: A recent study of the growth of its literature, *Annals of Library Science and Documentation.* 20, 39-57.
8. Sengupta, I.N., 1975, Choosing microbiology journals: Study of the growth of literature in the field, *Annals of Library Science and Documentation.* 21, 39-57.
9. RameshBabu, B., Ramakrishnan, J., 2007, Trends in the growth of literature on hepatitis (1984-2003), *Journal of Korean Library and Information Science Society.* 38 (2), 31-50.
10. Schloman, B. E., 1997, Mapping the literature of allied health: project overview, *Bulletin of Medical Library Association.* 85 (3), 271-77.
11. RameshKundra., et al, 1999, Behavior of Bradford's Law towards citation data on Indian Medical Journal. In: *International Conference on Scientometrics and Informetrics Proceedin.* Colima; Mexico. p.580.
12. RameshBabu, B., Ramakrishnan, J., 2007, Indian contributions to the field of hepatitis (1984-2003): A Scientometric Study. In: Third International Conference on Webometrics, Informetrics, Scientometrics Science and Society & Eighth COLLNET Meeting. ICAR Symposium Hall, National Agriculture Science Complex; New Delhi (India). pp.22-32.
13. Lewin, H.S., 2008, Diabetes Mellitus publication patterns, 1984-2005, Journal of Medical Library Association. 86(2): 155-158.
14. Krishnamoorthy, G., Ramakrishnan, J., Devi, S., 2009, Bibliometric Analysis of literature on diabetes (1995-2004). Annals of Library and Information Studies. 54 (September): 150-155.
15. Macias-Chapula, C.A,. 2000, AIDS in Haiti: a bibliometric analysis. Bulletin of Medical Library Association. 88(1), 56-61.
16. Hartinah, S., et…al., 2001, Indonesian Nutrition Research Papers 1979-2000: A Bibliometric Analysis. In: Proceedings of the 8th International Conference on Scientometrics and Informetrics: Bibliometrics&Informetrics Research Group; Sydney [Australia]. p 225-34.
17. Divya Srivastava,. 2004, Collaborative Activity in the Field of Biomedical Sciences: A Bibliometric Analysis of Biomedical Publications. In: Information and knowledge Management in Health Sciences: Newer Perspectives MLAI 2004 National Convention, Dr.ALM Post Graduate Institute of Basic Medical Sciences, University of Madras; Chennai (India). p 181-96.
18. Hunt, R., 1978, Plant growth analysis: London: Edward Arnold.

19. Blackman, V.H,. 1919. The compound interest law and plant Growth, *Annals of Botany.* 33: 353-360.

20. Mahapatra, M,. 1985, On the Validity of the theory of Exponential Growth of Scientific Literature, Proceedings of the 15th IASLIC Conference, Bangalore, p. 61-70.

21. Bradford, S. C., 1934, Sources of Information on specific subjects, *Engineering,* 137, 85-86.

22. Subramanyam, K,. 1993, Bibliometric Studies of Research Collaboration: A review. *Journal of Information Science.* 6, 33-38.