

# Publication trends on Holy Basil (Tulsi): A bibliometric study

Shiv Singh<sup>1</sup>, Reena Mishra<sup>2</sup>, Neha Munjal<sup>3,\*</sup> and Vijay Mohan Soni<sup>3</sup>

<sup>1</sup> Bennett University, Uttar Pradesh, India,

<sup>2</sup> Bansthali University, Rajasthan, India,

<sup>3</sup> Lovely Professional University, Punjab, India.

## Abstract

Tulsi is an aromatic shrub in the basil family Lamiaceae (tribe ocimeae). In Ayurveda, Tulsi is known as “The Incomparable One,” “Mother Medicine of Nature” and “The Queen of Herbs,” and is revered as an “elixir of life”. It is a renowned plant because of its medicinal and spiritual significance. It is considered as a potent adaptogen, Tulsi has a unique combination of pharmacological actions that promote wellbeing and resilience. Thus, in this paper an attempt has been made to analyze the research trends on Tulsi by using the renowned bibliometric techniques.

**Keywords:** Tulasi, Holy Basil, Ayurveda, Bibliometrics, Scopus, *Ocimum Tenuiflorum*

## Introduction

As per the Hindu belief, Tulsi, Tulasi or Vrinda (Holy Basil) is a sacred plant. Hindus considered it as resemblance of the goddess Tulsi. Many Hindus have Tulsi plants in their home and Hindus worshiped daily on this plant. This plant is cultivated for religious purposes, and for its medicinal health benefits. It is one of the preeminently used herb in Ayurveda for curing chronic disease and having healthy lifestyle.

Tulsi is considered an adaptogenic herb. It is used for anxiety, stress, and fatigue, and may be used in many herbal formulations to help treat numerous diseases such as asthma, bronchitis, colds, flu etc. Tulsi comprises of several beneficial compounds such as Eugenol, Ursolic and rosmarnic acid, Apigenin, Lutein, Ocimumosides A and B etc. These compounds have several health benefits [1-6].

Because of this scientific importance, several studies have been conducted to explore the potential of Holy basil. In this paper an attempt has been made to investigate the research done on Tulsi worldwide, by using the bibliometrics techniques.

Bibliometric method uses the statistical method to analyze the scientific productivity of any research domain. It helps to access the quality and impact of research. It's one of the most popular method and widely used by researchers such as A. Thirumagal and S. Sivasubramanian [7] have done the bibliometric analysis on medicinal and aromatic plants. They fetched the data from web of science for the 5 years from 2008 to 2012. They have analyzed high productive journals, most prolific authors in India. They concluded that ‘GB Pant Inst Himalayan Environm & Dev’ is at the top with maximum records and ‘Journal of Ethnopharmacology’ has 64 publications and most prolific author is Kumar A.

Bibliometric analysis of studies in medicinal and aromatic plants for rural development has been conducted by M. Kullak [8]. He extracted the data from the Scopus by limiting the criteria to the ‘medicinal and aromatic plants’ and ‘rural development’. He founded 113 relevant documents, which were matching the criteria and the analysis of documents were done on the aspect of geographical, keyword occurrence, and collaborative pattern.

M.A. Anwar [9] carried out a bibliometric analysis of the literature on *Nigella sativa* (Habbat al-barakah or Black seed). The focus of the study was on the periodic growth of literature, author patterns, topical focus, and geographic origin of literature on the subject. He has explored multiple databases and identified 530 documents. This data set was analyzed using various bibliographic characteristics. The concluding remarks were India and Egypt are the leading contributors and majority of the work is collaboration and there are only 36 journals which are authors are preferring.

T. Bartol and M.M. Talarczyk [10] evaluated natural fibers (fiber crops or fiber plants) in Scopus, Web of Science (WOS), and Google Scholar with regard to growth trends and leading countries by authors/co-authors of documents. They concluded that the principal contributing countries are China, India, and USA. China returns similar total counts as USA in 1994–2013 but is producing twice as many records in the most recent period. Interpretation of results depends on the query (selection of search terms, fields, and search syntax) and database or information system under analysis.

## Methodology

To analyse the publication trends on the most prominent holy plant of India, the database of Scopus [11] was explored to extract the results on Tulsi. The keywords searched are 'Tulsi', 'Tulasi', 'Vrinda', 'HolyBasil'. The extracted data was further analyzed to draw the inferences in context to growth trend, most prolific authors, journals, organizations, countries etc.

## Data Interpretation

Table 1 represents the growth of the papers on holy basil. The work on this is going from 100 years, but the maximum papers are in the period of 2013–2017. The growth has gained momentum from 2003, which coincides with the growth of yoga, and including holistic lifestyle and re-emergence of Ayurveda in India. Majority of them are research articles (516, 82.96 %) of the total. There are few review articles, conference paper, book chapter, books, letter, short survey etc.

Year		Number of Contribution	Percentage
From	To		
2013	2017	309	49.68
2008	2012	178	28.62
2003	2007	75	12.06
1998	2002	24	3.86
1993	1997	17	2.73
1914	1992	19	3.05

Table 1: Contribution of publication on Holy Basil (Tulsi)

Table 2 represents the most prolific authors, S P Singh from Saurashtra University, Gujarat, India is at the top with 7 publications, followed by Baliga, M.S. Father Muller Medical College, Karnataka, India. TheChitprasert, P. from Kasetsart university from Thailand is also at the second position. Grover J. K. and Mahapatra S. C. are from All Indian Institute of Medical Sciences, New Delhi, India.

Name of Author	No. of Publication	Affiliation
Singh, S.P.	7	Saurashtra University, Gujarat, India
Baliga, M.S.	5	Father Muller Medical College, Karnataka, India
Chitprasert, P.	5	Kasetsart University, Thailand
Grover, J.K.	5	All-India Institute of Medical Sciences, New Delhi, India
Mahapatra, S.C.	5	All-India Institute of Medical Sciences, New Delhi, India
Singh, S.	5	University of Delhi, India

Table 2: Prolific authors engaged in Holy Basil (Tulsi)

Table 3, represents the top most journals, which are publishing the research articles on Holy basil. The first position is shared by the three journals 'International Journal of Pharma and Bio Sciences', 'International Journal of Pharmaceutical Sciences Review and Research' and Research Journal of Pharmaceutical Biological and chemical sciences with 10 papers each.

Name of the Journal	No. of Publications
International Journal of Pharma and Bio Sciences	10
International Journal of Pharmaceutical Sciences Review and Research	10
Research Journal of Pharmaceutical Biological and Chemical Sciences	10
Acta Horticulture	9
Indian Journal of Experimental Biology	9

Indian Journal of Physiology and Pharmacology	9
Journal of Ethnopharmacology	9
Asian Journal of Pharmaceutical and Clinical Research	7
International Journal of Pharmacy and Pharmaceutical Sciences	7

Table 3: Most productive Journal along with contributions

Table 4 presents a top organization doing research on Tulsi. The most dominating organization is All India Institute of medical sciences, New Delhi with 17 publication followed by CCS Haryana Agricultural university. The third position is shared by the three organization Govind Ballabh Pant University of Agriculture and Technology, Jadavpur university and University of Delhi with 8 publications each.

Name of Orgnisation	No. of Publications
All India Institute of Medical Sciences, New Delhi, India	17
CCS Haryana Agricultural University, Haryana, India	9
Govind Ballabh Pant University of Agriculture and Technology, Uttarakhand, India	8
Jadavpur University, West Bengal, India	8
University of Delhi, Delhi, India	8
Vellore Institute of Technology, Vellore, Tamil Nadu, India	7
Central Institute of Medicinal and Aromatic Plants India, Uttar Pradesh, India	7
Kasetsart University, Thailand	7
Saveetha Dental College and Hospitals, Tamil Nadu, India	7

Table 4: Most productive journal along with contributions

Table 5 shows the country wise contribution; India is at the top with 442 contributions. There is a significant contribution from United States, Thailand, United Kingdom, Australia, Germany, Canada, Pakistan of 48,37,11,8,8,7,7 contribution respectively.

Name of Country	No. of Publications
India	442
United States	48
Thailand	37
United Kingdom	11
Australia	8
Germany	8
Canada	7
Pakistan	7
Other Country Authors -39	91
Undefined	20

Table 5: Most productive county and their share.

## Summary

Tulsi is a plant which is worshiped and used for medicinal benefits. lot of research is done on Tulsi, but there are very few articles in the Scopus databases i.e. 622, The analysis of these documents indicate that India is at the top in exploring the Tulsi, and maximum research is done by All India institute of medical sciences, New Delhi. The growth on articles has been seen in the recent years, but looking to significant characteristics the more research is needed, Hopefully researchers are working in this dimension only.

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