A Bibliometric Analysis of Medical Research Literature on Commonly Sold Herbal Medicines

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Abstract

Background

Herbal medicines and supplements are frequently utilized for healthcare purposes. Due to their increased use globally, it is essential to understand the characteristics of research conducted on this topic.

Methods

Search strategies were created by identifying the top-selling herbal supplements from the 2020 HerbalGram Market Report. The Natural Medicines database was used to identify and record the most common terms used to refer to the herbal supplements. The search strategy was limited to the "MEDICINE" category. Searches were run on Scopus on August 02, 2021, and all results were exported on the same day to avoid discrepancies due to daily database updates. Various bibliometric data were collected, including information on total number of publications, publications per year, number of authors and journals, open access status, document type, author affiliations, most highly published authors, institutional affiliations, funding sponsors, country of publication, and most highly cited publications. VOSViewer, a software tool, was used to construct and visualize the bibliometric networks.

Results

A total of 42 385 (12 481 open access) articles published by 92 814 unique authors between 1827 and 2021 were obtained. An overall upward trend has been noticed in the number of publications, with the most widely researched herbal medicines being wheatgrass, turmeric, barley, garlic, and green tea. The most productive countries were the United States (n=6957) and China (n=5426). *Planta Medica* published the largest number of publications related to herbal medicine.

Conclusions

A continuous upward trend has been identified in the number of publications surrounding commonly sold herbal medicines. Due to the projected increase of the use of these medicines, future research should examine and analyse the characteristics of emerging publications in this field.

Background

Herbal medicine refers to the use of plant or plant-derived preparations as an approach to wellbeing in order to prevent and treat disease [1, 2]. Over the past decade, there has been a substantial surge in the use of these remedies globally [3]. According to the World Health Organization, approximately 80% of the world's population utilises herbal medicines for healthcare purposes [3–5]. In the United States alone, it is estimated that 40.6 million adults use herbal medicines and supplements [6]. These remedies play a

prominent role in many traditional, complementary and alternative medicine systems, being used for the prevention or treatment of disease, as well as for the promotion of overall wellness [6–8]. Several factors have contributed to the widespread use of herbal medicines, including their historical roots in traditional medicine, their affordability, and their perceived safety [7–10]. Natural products are often perceived as healthier than pharmaceutical medications, leading to their increased use [8, 10]. Furthermore, patients expressing dissatisfaction with conventional medicine has led individuals to consider alternative therapies including herbal medicines [7, 8, 11].

Information on the responsible use of herbal medicines can be obtained from the American Botanical Council, a research and educational organisation. The American Botanical Council publishes HerbalGram, a peer-reviewed journal, which provides information on the sales of popular herbal medicines in the United States [12]. The 2020 HerbalGram Market report highlights the increased sales of several such herbal medicines over the past decade [13]. In the United States, sales of herbal supplements increased by 8.6% in 2019 and by 17.3% in 2020 [12, 13]. In 2019, the global herbal medicine market size was approximately $83 billion, and it is projected to continue expanding in the coming decade [16, 17]. The coronavirus disease 2019 (COVID-19) pandemic has also contributed to the increased sales of herbal medicines as there was a high demand for immune-boosting therapeutics during this time [14–16]. It is evident that there is a growing use of herbal medicines, and thus, there is an increased need for research on the safety and efficacy of these therapies.

According to the 2020 HerbalGram Market Report, horehound and echinacea are among the most widely purchased herbal medicines in the United States [13]. Horehound (*Marrubium vulgare)* is commonly used to treat respiratory and gastrointestinal disorders [13, 18]. Echinacea, an ingredient derived from *Echinacea spp.*, is often used as a dietary supplement for individuals with the common cold [19]. This herbal medicine has been popularized as a result of the COVID-19 pandemic; preliminary research has associated the use of echinacea with a decrease in progression of acute respiratory distress syndrome, a type of lung injury caused by COVID-19 infection [20, 21]. However, further research is warranted as a causal relationship between echinacea and COVID-19 has not yet been established [10, 20]. This lack of clarity, as observed in the case of echinacea and COVID-19, can also be seen in various other herbal medicines. The absence of a clear causal relationship between the use of several herbal medicines and their respective therapeutic outcomes is concerning. A related issue is the potential for harmful side effects [10, 22, 23]. Oftentimes, there is a lack of both standard quality controls and informative labels on herbal medicine products [3, 24]. As such, there is a growing interest within the scientific community to understand the therapeutic effects and potential harms of popular herbal medicines.

A thorough analysis of the features of the current literature on the topic may inform future areas of research [25]. It is thus essential to identify the quantity and characteristics of medical literature on popular herbal medicines. Bibliometric analyses involve a statistical assessment of scientific publications in order to identify the characteristics and impact of the literature published in a particular academic discipline [26, 27]. This type of analysis provides a quantitative measure of research performance in terms of publication output of a certain country, subject, discipline or region in the world

[28]. Previous bibliometric analyses of herbal medicine have focused on particular geographic locations, families of plants, activities of medicinal plants (i.e., antiviral or antifungal) and worldwide trends [29–31]. However, to date, no study has assessed the characteristics of medical literature on the most commonly sold herbal medicines listed on the 2020 HerbalGram Market Report. Conducting a bibliometric analysis on this topic will highlight which herbal medicines are being studied. Additionally, this analysis will demonstrate if the most commonly sold herbal medicines are widely researched. Thus, the purpose of the present study is to conduct a bibliometric analysis investigating the trends in medical literature on commonly sold herbal medicines.

Methods

The 2020 HerbalGram Market Report was utilized to identify and record the names and Latin binomials of the 40 most sold herbal medicines [13]. For our bibliometric analysis, “cannabidiol” was removed since a large amount of literature surrounding its recreational use exists; additionally, it is the only herb listed in the report that is commonly used for recreational purposes. Therefore, we examined 39 herbal medicines for our project. TITLE search strategies were created for each herbal medicine. To create the search strategies, we first recorded the name and Latin binomial of each 39 herbal supplement from the HerbalGram Market Report. Then, we used the Natural Medicines database to capture the most common terms used to refer to each respective herbal product. The name of the herbal supplement was searched on the Natural Medicines database, professional monographs were identified, and all names in the “commonly referred to as” subsection were recorded. Redundancies in search strategies were reduced by removing repetitive terms. For instance, in the TITLE search strategy for “Echinacea”, the terms “Echinacea angustifolia”, “Echinacea pallida”, and “Echinacea purpurea” were removed because the first term “Echinacea” would capture these terms in Scopus. Additionally, certain abbreviations which could lead to results unrelated to the herbal medicine in question were removed to best reflect the search terms. NDP and SA created the search strategies, and each search strategy was reviewed by all authors. Lastly, each individual search strategy was tested on Scopus to ensure that there were no syntax errors. The finalized search strategy can be found in **Supplementary File 1**.

After the search strategies were finalized, searches were run on Scopus on August 02, 2021. For this bibliometric analysis, we combined the 39 individual search strategies into one overall search strategy separated by (AND) operators, and the entire search was followed by the limit: (LIMIT-TO (SUBJAREA, “MEDI”)). This limit helped ensure that medical literature related to the herbal supplements was encompassed. If an article is indexed within the “medicine” category in Scopus, the article falls under the “health sciences” field in Scopus and not in the “physical sciences”, “life sciences”, or “social sciences” fields [32].Furthermore, by limiting the search to the “medicine” category, we attempted to capture only the results pertaining to herbal medicines. All searches were completed, and results were exported and recorded on the same day to avoid inconsistencies in the results due to daily database updates. The searches were only conducted on Scopus as it is the largest abstract and citation database for peer-reviewed literature.

The bibliometric data that were collected included the total number of publications, publications per year, number of authors and journals, open access status, document type, author affiliations, most highly published authors, institutional affiliation, funding sponsors, country of publication, and most highly cited publications. The trends identified within this set of publications were identified and presented. Information was visualized and mapped using VOSViewer [33, 34]. This tool also allowed for the construction of bibliometric networks.

Results

A total of 42 385 (12 481 open access) publications were published by 92 814 unique authors. The results were published between 1827 and 2021 and depict an overall upward trend in terms of number of publications. This is shown in Figure 1. There has been a 36% increase in the quantity of publications on the most commonly sold herbal medicines between the 2010 and 2020. The highest number of publications were observed in the year 2020 (n=2147). *Planta Medica* published the highest number of publications (n=642), followed by *Journal of Nutrition* (n=625) and *British Journal of Nutrition* (n=533). The characteristics of the 30 journals with the most publications are depicted in Table 1, along with the 2020 Impact Factors of these journals, obtained by hand-searching the Journal Citation Reports by Clarivate. The impact factors ranged from 0.326 to 79.321.

The subject area containing the largest number of publications was “biochemistry, genetics and molecular biology” (n=10 257), followed by “pharmacology, toxicology and pharmaceutics” (n=7794). Among these categories, the majority of publications were articles (n=35 494) followed by reviews (n=2338). Most publications were in English (n=33 625), with the second most utilized language being German (n=2489), closely followed by Chinese (n=2069). The most frequent funding sponsors were the National Institutes of Health (n=1792), the U.S. Department of Health and Human Services (n=1716), and the National Natural Science Foundation of China (n=1074). The most common affiliations were Tehran University of Medical Sciences (n=302), the Ministry of Education China (n=280), and the Chinese Academy of Sciences (n=235). Full details surrounding the characteristics of this subset of publications are found in Table 2. Figure 2 provides a breakdown of the number of publications within the category of “medicine” that intersect with other fields, including “pharmacology, toxicology and pharmaceutics” and “agricultural and biological sciences”. The 10 most productive authors are listed in Table 3, and the 100 most highly cited papers are highlighted in Table 4. Finally, Table 5 shows the quantity of search results per herbal medicine; the greatest quantity of literature was published about wheatgrass (*Triticum aestivum*), turmeric (*Curcuma longa*), and barley (*Hordeum vulgare*).

VOSViewer, a software tool, was utilized to construct bibliometric networks (version 1.6.16). All 42,385 results were captured in the maps created via VOSViewer. The in-depth analysis conducted through VOSViewer allows for a greater level of understanding of the relationships between items such as country of publication, author, journal published in, and keywords. Within the bibliometric maps, labels and circles are used to represent each item. The size of the label and circle is determined by the weight of an item. Figure 3 examines how related various items are based on the number of co-authored publications and

depicts a co-authorship analysis of the 50 most productive countries. This figure demonstrates that the United States and China were the most productive countries in publishing articles related to herbal medicine. Additionally, American authors have a wide network of collaboration while the general trend demonstrates that Chinese authors collaborate less with researchers in other countries. Furthermore, Indian authors collaborate most often with researchers in Asia, while there is greater collaboration between German authors and those in other European countries. Figure 4 provides a co-occurrence analysis of the top 500 keywords used by authors. 'Curcumin' was the most frequently occurring keyword, followed by dietary fiber, wheat, and oxidative stress. Lastly, Figure 5 shows an analysis of the top 100 sources publishing the largest number of publications related to herbal medicine.

Discussion

The purpose of conducting this bibliometric analysis is to understand the characteristics of the literature on the most commonly sold herbal medicines. Between 2010 and 2020, there has been a 36% increase in the quantity of literature on commonly sold herbal medicines. According to the HerbalGram report, the three most commonly sold herbal medicines were horehound *(Marrubium vulgare*) with the total sales in 2020 being $152 731 013.98, followed by echinacea *(Echinacea* spp.), the total sales of which were $120 185 302.86, and elderberry (*Sambucus nigra* and *Sambucus canadensis)*, with the total sales being $107 574 611.46 [(13)]. When calculating the percentages of the total articles accounted for by each herb, 0.19% of titles included the term "horehound", 1.39% included "echinacea", and 0.29% included "elderberry." The three most commonly researched herbs were wheatgrass, turmeric and barley. Therefore, the order of the most commonly sold herbal medicines, as indicated on the HerbalGram Market report, did not match the order of the quantity of research for these herbs.

Many factors may have contributed to the high quantity of research on wheatgrass, turmeric and barley. Firstly, since there is considerable overlap between articles in the category of "medicine" and those in "pharmacology, toxicology and pharmaceutics" and "agricultural and biological sciences", we can infer that there are widespread applications of wheatgrass, barley and turmeric. For example, the literature on wheatgrass encompasses information on harvesting wheatgrass, preventing gene flow between crops, and the dietary benefits and harms [35, 36]. Research on the clinical benefits of wheatgrass inevitably intersects with agricultural practices such as drying procedures and environmental influences [37]. Similarly, the medical literature on barley encompasses research related to the dietary benefits and harms of barley. Barley is one of the most important cereal crops in the world and its high proportion of fiber has led to research on its health impacts [38, 39]. Thus, the large amount of literature on wheatgrass and barley may result from their ubiquitous use in various clinical and agricultural settings. This finding provides a rationale as to why wheatgrass and barley are not listed as the highest selling herbal medicines on HerbalGram, but why they were the most widely researched herbal medicines. Finally, much of the literature on turmeric is related to its anticancer components, the potential effects on Alzheimer's disease, and the biological/pharmacologic implications of this substance [40, 41]. In the 2020 HerbalGram Market report, turmeric was listed as the fourth highest-selling herbal supplement, with the total sales in 2020 being $96 971 371 [13].

Overall, the findings of this bibliometric analysis provide insight into the characteristics of commonly sold herbal medicines, while also indicating that many of these products have applications beyond their use as herbal medicines. Despite the growth in the quantity of literature in this area, barriers to research in this field include ethical concerns and varying regulatory bodies in different countries, resulting in a lack of consistency in the way herbal medicines are approved and sold [9]. Specifically, there may be public health concerns in developing randomized control trials for therapies that have been used in traditional medicine but have demonstrated harmful effects through in vitro studies [21, 22].

Comparative Literature

Our bibliometric analysis encompassed 42 385 results within the field of medicine. Other bibliometric analyses focused on herbal medicines did not incorporate as many results and were not specific to the field of medicine. For example, Salmerón-Manzano et al. published a bibliometric analysis which examined the use of medicinal plants and worldwide research trends [(39)]. They identified over 100,000 studies between 1960 to 2019, and similar to our study, identified that the most productive countries were China and India. While this bibliometric analysis encompassed a large amount of literature, this literature was not solely focused on the medical use of herbal medicines as our bibliometric analysis was. Another study by Garcia-Garcia et al. examining the use of herbal plants in psychiatry captured 21,409 results [42]. While they also noticed an increase in productivity between 1986 to 2006 in this field, the results are specific to psychiatry and only capture results until 2006 [42]. Furthermore, a bibliometric analysis published in 2021 examined the research trends regarding traditional, complementary, alternative and integrative medicine, and noticed an upwards trend in literature. Similar to our study, the most productive countries were identified as China and the United States [26].

Other bibliometric analyses have also investigated the literature on the use of herbal medicines for specific clinical outcomes. Wang et al. examined the use of herbal medicine for pain between 1990 and 2019 and captured the characteristics of 2986 articles [25]. Although they analysed a considerably smaller quantity of literature, a general upward trend in herbal medicine publication was reported, similar to the findings from our study. Wang et al. found that the most productive countries were China, the United States, and South Korea. Similarly, the most productive countries for our study were the United States, China, and India. Another example can be found in Huang et al.'s study which examined the literature on Chinese herbal medicines and treatment of cardiovascular disease [6]. Although our analysis was focussed on the medical research surrounding commonly sold herbal medicines, there are some interesting comparisons that can be drawn. They found that the country with most publications was China, which is reasonable seeing as the focus of their study was on Chinese herbal medicine. In both our study and Huang et al.'s, Japan, the United Kingdom, South Korea and Germany were among the top 10 countries with the most relevant publications. Our findings show that the United States produces the most literature on the topic; however, the United States was not on the top 10 list in Huang et al.'s study. Additionally, PubMed was used to conduct searches, whereas we ran our searches on Scopus. Another bibliometric analysis of the Chinese herbal medicine literature was conducted by Hu et al. in 2019. Unlike the previous two studies discussed, this group focussed on the randomized controlled trials (RCT) of

Chinese herbal medicine between 2010 and 2019 [43]. Their results indicated that there has not been a steady growth in the number of RCTs published within their identified time span. Our study on the other hand elucidated a 36% increase in the quantity of literature on our topic of focus. The most productive countries were similar to those established in our study and the aforementioned bibliometric analyses [25, 43, 44]. Overall, while various bibliometric analyses have been conducted in the general field of herbal medicine, we were unable to identify any bibliometric analyses which focused on the medical literature on commonly sold herbal medicines, justifying the need for our study.

Strengths and Limitations

Various strengths were associated with this bibliometric analysis. First, we recorded the characteristics of 42 385 results published by 92 814 authors. While not all of the literature may have been captured because we only used one database, Scopus has the largest abstract and citation database for peer-reviewed literature as compared to other databases. For example, Web of Science contains a lesser number of indexed citations, and the OVID database lacks valuable metrics such as citation counts. Another strength of this study is that the software tool, VOSViewer, was used to visualize bibliometric networks. The use of these bibliometric maps allowed us to conduct a deeper level of analysis when examining the various relationships between items such as country of publication, journal published in, and keywords. A limitation of this bibliometric analysis is that the search results were not screened manually. Further limitations refer to specific search strategies as some had to be modified in order to appropriately represent the herbal supplement. For example, the HerbalGram Market Report stated that plant sterols do not include “beta-sitosterol”. Therefore, any terms which included “beta-sitosterol” were removed from the search strategy. As another example, when developing the search strategy for green tea, the authors included terms from the green tea professional monograph, and not the black tea professional monograph. However, it must be noted that both green tea and black tea have the same Latin binomial (*Camellia sinensis*). Although no terms explicitly related to black tea were included in the search strategy, some terms relating to black tea may have been included in the search strategy for green tea.

Conclusions

This study identified the characteristics of over 42 000 publications, 12 481 of which were open access, on the 39 most commonly sold herbal medicines. This constitutes the largest bibliometric analysis on this subject area thus far. The most productive countries were the United States, China, and India. The most widely researched herbal medicines were wheatgrass, turmeric, barley, garlic and green tea. There has been a continuous upward trend since 1827 in the number of publications on commonly sold herbal medicines. A more dramatic increase in the quantity of publications was observed in 1995, with the greatest number of articles published in 2020. This study also identified the herbal medicines that are understudied. It is crucial for future studies to continue investigating the trends in publications on herbal medicines given the increased and global consumption of herbal medicines [13]. Investigating the trends in publications on herbal medicines allows researchers to determine future areas of research. Since sales

for these therapeutics are projected to increase in the next decade, the body of publications is likely to grow as well.

Declarations

Ethics Approval and Consent to Participate

This study involved a bibliometric analysis of peer-reviewed literature only; it did not require ethics approval or consent to participate.

Consent for Publication

All authors consent to this manuscript's publication.

Availability of Data and Materials

All relevant data are included in this manuscript.

Competing Interests

The authors declare that they have no competing interests.

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This study was unfunded.

Authors' Contributions

JYN: designed and conceptualized the study, collected and analysed data, drafted the manuscript, and gave final approval of the version to be published.

SA: assisted with the collection and analysis of data, made critical revisions to the manuscript, and gave final approval of the version to be published.

NDP: assisted with the collection and analysis of data, made critical revisions to the manuscript, and gave final approval of the version to be published.

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Tables

Table 1: Characteristics of the 30 Journals Having Published the Highest Number of Herbal Medicine Publications

Journal Name	Number of Publications	2020 Impact Factor
Planta Medica	642	3.352
Journal of Nutrition	625	4.798
British Journal of Nutrition	533	3.718
Genetika	449	0.326
American Journal of Clinical Nutrition	442	7.045
Journal of Ginseng Research	421	6.060
Phytomedicine	385	5.340
Journal of Functional Foods	374	4.451
Zhongguo Zhongyao Zazhi	368	N/A
Evidence Based Complementary and Alternative Medicine	344	2.629
Chinese Traditional and Herbal Drugs	323	N/A
Journal of Medicinal Food	301	2.786
Journal of Natural Products	262	4.050
Journal of Nutritional Biochemistry	262	6.048
Journal of Heredity	260	2.645
Nutrition and Cancer	256	2.900
Deutsche Apotheker Zeitung	249	N/A
Nutrition Research	235	3.315
Ecotoxicology and Environmental Safety	228	6.291
Pharmaceutical Biology	221	3.503
Heredity	218	3.821
Natural Product Communications	212	0.986
BMC Complementary and Alternative Medicine	211	3.659
European Journal of Clinical Nutrition	206	4.016
Lancet	197	79.321
Frontiers In Microbiology	183	5.640
Asian Journal of Pharmaceutical And Clinical Research	180	N/A

Journal of Medicinal Plants	174	N/A
Zeitschrift Fur Phytotherapie	173	N/A

Table 2: General Characteristics of Herbal Medicine Publications

Number of Total Publications (n=42 385)	
Number of Open Access Publications (n=12 481)	
Document Type (# of publications)	Article (n=35494)
	Review (n=2338)
	Letter (n=1091)
	Note (n=878)
	Book Chapter (n=765)
	Conference Paper (n=732)
	Short Survey (n=426)
	Erratum (n=338)
	Editorial (n=266)
	Retracted (n=32)
	Book (n=14)
	Data Paper (n=2)
	Undefined (n=9)
Source Titles (Journals) Across All Publications (n=4991)	
Unique Authors Across All Publications (n=92814)	
Subject Area of Publication (10 Highest)	
(# of publications)	Medicine (n=42 385)
	Pharmacology, Toxicology and Pharmaceutics (n=7794)
	Biochemistry, Genetics and Molecular Biology (n=10257)
	Neuroscience (n=637)
	Psychology (n=120)
	Social Sciences (n=152)
	Chemistry (n=2145)
	Agricultural and Biological Sciences (n=3121)
	Environmental Science (n=1203)
	Nursing (n=6080)
Language of Publication (10 Highest)	

(# of publications)	English (n=33 635)
	German (n=2489
	Chinese (n=2069)
	Russian (n=1471)
	French (n=600)
	Spanish (n=391)
	Japanese (n=325)
	Persian (n=316)
	Italian (n=225)
	Portuguese (n=142)
Country of Publication (10 Highest)	
(# of publications)	United States (n=6957)
	China (n=5426)
	India (n=2824)
	Germany (n=2735)
	Japan (n=2378)
	Iran (n=1947)
	United Kingdom (n=1866)
	South Korea (n=1582)
	Italy (n=1383)
	Canada (n=1193)
Institutional Affiliation (10 Highest)	
(# of publications)	Tehran University of Medical Sciences (n=302)
	Ministry of Education China (n=280)
	Chinese Academy of Sciences (n=235)
	Chinese Academy of Medical Sciences; Peking Union Medical College (n=217)
	Shahid Beheshti University of Medical Sciences (n=214)
	Russian Academy of Sciences (n=201)
	University of Toronto (n=198)

	United States Department of Agriculture (n=191)
	Mashhad University of Medical Sciences (n=189)
	Helsingin Yliopisto (n=189)
Funding Sponsor (10 Highest)	
(# of publications)	National Institutes of Health (n=1792)
	U.S. Department of Health and Human Services (n=1716)
	National Natural Science Foundation of China (n=1074
	National Cancer Institute (n=710)
	Ministry of Education, Culture, Sports, Science and Technology (n=325)
	Japan Society for the Promotion of Science (n=289)
	National Institute of Diabetes and Digestive and Kidney Diseases (n=264)
	National Center for Complementary and Integrative Health (n=257)
	National Research Foundation of Korea (n=246)
	National Heart, Lung, and Blood Institute (n=232)

Table 3: 10 Most Productive Authors Across Herbal Medicine Publications

Author Name	Number of Publications
Agarwal, R.	79
Jones, P.J.H.	66
Ernst, E.	64
Sahebkar, A.	64
Aggarwal, B.B.	52
Bauer, R.	50
Jenkins, D.J.A.	50
Hara, Y.	47
Kritchevsky, D.	46
Cummings, J.H.	40

Table 4: 100 Highest Cited Papers

Position	Authors	Title	Year	Source Title	Citation Count
1	Aggarwal B.B., Kumar A., Bharti A.C.	Anticancer potential of curcumin: Preclinical and clinical studies	2003	Anticancer Research	2144
2	Chen A.-L., Hsu C.-H., Lin J.-K., Hsu M.-M., Ho Y.-F., She T.-S., Ko J.-Y., Lin J.-T., Lin B.-R., Wu M.-S., Yu H.-S., Jee S.-H., Chen G.-S., Chen T.-M., Chen C.-A., Lai M.-K., Pu Y.-S., Pan M.-H., Wang Y.-J., Tsai C.-C., Hsieh C.-Y.	Phase I clinical trial of curcumin, a chemopreventive agent, in patients with high-risk or pre-malignant lesions	2001	Anticancer Research	1706
s3	de Lorgeril M., Renaud S., Salen P., Monjaud I., Mamelle N., Martin J.L., Guidollet J., Touboul P., Delaye J.	Mediterranean alpha-linolenic acid-rich diet in secondary prevention of coronary heart disease	1994	The Lancet	1701
4	Graham H.N.	Green tea composition, consumption, and polyphenol chemistry	1992	Preventive Medicine	1450
5	Ammon H.P.T., Wahl M.A.	Pharmacology of Curcuma longa	1991	Planta Medica	1450
6	Salmerón J., Manson J.E., Stampfer M.J., Colditz G.A., Wing A.L., Willett W.C.	Dietary fiber, glycemic load, and risk of non-insulin-dependent diabetes mellitus in women	1997	Journal of the American Medical Association	1438
7	Brown L., Rosner B., Willett W.W., Sacks F.M.	Cholesterol-lowering effects of dietary fiber: A meta-analysis	1999	American Journal of Clinical Nutrition	1280
8	Cabrera C., Artacho R., Giménez R.	Beneficial effects of green tea—A review	2006	Journal of the American College of Nutrition	1270
9	Sharma R.A., Gescher A.J., Steward W.P.	Curcumin: The story so far	2005	European Journal of Cancer	1248
10	Shoba G., Joy D., Joseph T., Majeed M., Rajendran R., Srinivas P.S.S.R.	Influence of piperine on the pharmacokinetics of curcumin in animals and human volunteers	1998	Planta Medica	1235
11	Salmerón J.,	Dietary fiber, glycemic	1997	Diabetes Care	1135

	Ascherio A., Rimm E.B., Colditz G.A., Spiegelman D., Jenkins D.J., Stampfer M.J., Wing A.L., Willett W.C.	load, and risk of NIDDM in men			
12	Anderson J.W., Baird P., Davis Jr. R.H., Ferreri S., Knudtson M., Koraym A., Waters V., Williams C.L.	Health benefits of dietary fiber	2009	Nutrition Reviews	1081
13	Dhillon N., Aggarwal B.B., Newman R.A., Wolff R.A., Kunnumakkara A.B., Abbruzzese J.L., Ng C.S., Badmaev V., Kurzrock R.	Phase II trial of curcumin in patients with advanced pancreatic cancer	2008	Clinical Cancer Research	974
14	Meyer K.A., Kushi L.H., Jacobs Jr. D.R., Slavin J., Sellers T.A., Folsom A.R.	Carbohydrates, dietary fiber, and incident type 2 diabetes in older women	2000	American Journal of Clinical Nutrition	952
15	Sharma R.A., Euden S.A., Platton S.L., Cooke D.N., Shafayat A., Hewitt H.R., Marczylo T.H., Morgan B., Hemingway D., Plummer S.M., Pirmohamed M., Gescher A.J., Steward W.P.	Phase I clinical trial of oral curcumin: Biomarkers of systemic activity and compliance	2004	Clinical Cancer Research	942
16	Waples R.S.	Separating the wheat from the chaff: Patterns of genetic differentiation in high gene flow species	1998	Journal of Heredity	938
17	Ruby A.J., Kuttan G., Dinesh Babu K., Rajasekharan K.N., Kuttan R.	Anti-tumour and antioxidant activity of natural curcuminoids	1995	Cancer Letters	906
18	Jurenka J.S.	Anti-inflammatory properties of curcumin, a major constituent of Curcuma longa: A review of preclinical and clinical research	2009	Alternative Medicine Review	889

19	Lao C.D., Ruffin IV M.T., Normolle D., Heath D.D., Murray S.I., Bailey J.M., Boggs M.E., Crowell J., Rock C.L., Brenner D.E.	Dose escalation of a curcuminoid formulation	2006	BMC Complementary and Alternative Medicine	878
20	Kunnumakkara A.B., Anand P., Aggarwal B.B.	Curcumin inhibits proliferation, invasion, angiogenesis and metastasis of different cancers through interaction with multiple cell signaling proteins	2008	Cancer Letters	861
21	Jenkins D.J.A., Goff D.V., Metz G.L., Leeds A.R.	Dietary fibres, fibre analogues, and glucose tolerance: Importance of viscosity	1978	British Medical Journal	854
22	Anand P., Sundaram C., Jhurani S., Kunnumakkara A.B., Aggarwal B.B.	Curcumin and cancer: An “old-age” disease with an “age-old” solution	2008	Cancer Letters	848
23	Bisht S., Feldmann G., Soni S., Ravi R., Karikar C., Maitra A., Maitra A.	Polymeric nanoparticle-encapsulated curcumin (“nanocurcumin”): A novel strategy for human cancer therapy	2007	Journal of Nanobiotechnology	841
24	Bingham S.A., Day N.E., Luben R., Ferrari P., Slimani N., Norat T., Clavel-Chapelon F., Kesse E., Nieters A., Boeing H., Tjønneland A., Overvad K., Martinez C., Dorronsoro M., Gonzalez C.A., Key T.J., Trichopoulou A., Naska A., Vineis P., Tumino R., Krogh V., Bueno-De-Mesquita H.B., Peeters P.H.M., Berglund G., Hallmans G., Lund E., Skeie G., Kaaks R., Riboli E.	Dietary fibre in food and protection against colorectal cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC): An observational study	2003	Lancet	836
25	Wang C., Harris W.S., Chung M., Lichtenstein A.H.,	n-3 Fatty acids from fish or fish-oil supplements, but not α-linolenic acid,	2006	American Journal of Clinical Nutrition	816

	Balk E.M., Kupelnick B., Jordan H.S., Lau J.	benefit cardiovascular disease outcomes in primary- and secondary-prevention studies: A systematic review			
26	Kurzer M.S., Xu X.	Dietary phytoestrogens	1997	Annual Review of Nutrition	810
27	Burkitt D.P., Walker A.R.P., Painter N.S.	Effect of dietary fibre on stools and transit-Ttmes, and its tole in the causation of disease	1972	The Lancet	758
28	Huang M.-T., Smart R.C., Wong C.-Q., Conney A.H.	Inhibitory effect of curcumin, chlorogenic acid, caffeic Aacid, and rerulic acid on tumor promotion in mouse skin by 12-O-tetradecanoylphorbol-13-acetate	1988	Cancer Research	750
29	Rimm E.B., Ascherio A., Giovannucci E., Spiegelman D., Stampfer M.J., Willett W.C.	Vegetable, fruit, and cereal fiber intake and risk of coronary heart disease among men	1996	Journal of the American Medical Association	728
30	Chandalia M., Garg A., Lutjohann D., Von Bergmann K., Grundy S.M., Brinkley L.J.	Beneficial effects of high dietary fiber intake in patients with type 2 diabetes mellitus	2000	New England Journal of Medicine	724
31	Ankri S., Mirelman D.	Antimicrobial properties of allicin from garlic	1999	Microbes and Infection	720
32	Chainani-Wu N.	Safety and anti-inflammatory activity of curcumin: A component of tumeric (Curcuma longa)	2003	Journal of Alternative and Complementary Medicine	718
33	Ahmad N., Feyes D.K., Nieminen A.-L., Agarwal R., Mukhtar H.	Green tea constituent epigallocatechin-3-gallate and induction of apoptosis and cell cycle arrest in human carcinoma cells	1997	Journal of the National Cancer Institute	716
34	Amagase H., Petesch B.L., Matsuura H., Kasuga S., Itakura Y.	Intake of garlic and its bioactive components	2001	Journal of Nutrition	712

35	Duvoix A., Blasius R., Delhalle S., Schnekenburger M., Morceau F., Henry E., Dicato M., Diederich M.	Chemopreventive and therapeutic effects of curcumin	2005	Cancer Letters	693
36	Dulloo A.G., Duret C., Rohrer D., Girardier L., Mensi N., Fathi M., Chantre P., Vandermander J.	Efficacy of a green tea extract rich in catechin polyphenols and caffeine in increasing 24-h energy expenditure and fat oxidation in humans	1999	American Journal of Clinical Nutrition	690
37	Motterlini R., Foresti R., Bassi R., Green C.J.	Curcumin, an antioxidant and anti-inflammatory agent, induces heme oxygenase-1 and protects endothelial cells against oxidative stress	2000	Free Radical Biology and Medicine	688
38	Howarth N.C., Saltzman E., Roberts S.B.	Dietary fiber and weight regulation	2001	Nutrition Reviews	676
39	Rao C.V., Rivenson A., Simi B., Reddy B.S.	Chemoprevention of colon carcinogenesis by dietary curcumin, a naturally occurring plant phenolic compound	1995	Cancer Research	657
40	Jobin C., Bradham C.A., Russo M.P., Juma B., Narula A.S., Brenner D.A., Sartor R.B.	Curcumin blocks cytokine-mediated NF-κB activation and proinflammatory gene expression by inhibiting inhibitory factor I-κB kinase activity	1999	Journal of Immunology	653
41	Wilken R., Veena M.S., Wang M.B., Srivatsan E.S.	Curcumin: A review of anti-cancer properties and therapeutic activity in head and neck squamous cell carcinoma	2011	Molecular Cancer	647
42	Bailey D.G., Malcolm J., Arnold O., Spence J.D.	Grapefruit juice-drug interactions	1998	British Journal of Clinical Pharmacology	644
43	Burdge G.C., Calder P.C.	Conversion of α-linolenic acid to longer-chain polyunsaturated fatty acids in human adults	2005	Reproduction Nutrition Development	633
44	Khan N., Afaq F.,	Targeting multiple	2006	Cancer Research	627

	Saleem M., Ahmad N., Mukhtar H.	signaling pathways by green tea polyphenol (-)-epigallocatechin-3-gallate			
45	Slavin J.L.	Dietary fiber and body weight	2005	Nutrition	627
46	Flora K., Hahn M., Rosen H., Benner K.	Milk thistle (Silybum marianum) for the therapy of liver disease	1998	American Journal of Gastroenterology	626
47	Bharti A.C., Donato N., Singh S., Aggarwal B.B.	Curcumin (diferuloylmethane) down-regulates the constitutive activation of nuclear factor-κB and IκBα kinase in human multiple myeloma cells, leading to suppression of proliferation and induction of apoptosis	2003	Blood	617
48	Kuriyama S., Shimazu T., Ohmori K., Kikuchi N., Nakaya N., Nishino Y., Tsubono Y., Tsuji I.	Green tea consumption and mortality due to cardiovascular disease, cancer, and all causes in Japan: The Ohsaki study	2006	Journal of the American Medical Association	616
49	Aune D., Chan D.S.M., Lau R., Vieira R., Greenwood D.C., Kampman E., Norat T.	Dietary fibre, whole grains, and risk of colorectal cancer: Systematic review and dose-response meta-analysis of prospective studies	2011	BMJ (Online)	610
50	Herman C., Adlercreutz T., Goldin B.R., Gorbach S.L., Hockerstedt K.A.V., Watanabe S., Hamalainen E.K., Markkanen M.H., Makela T.H., Wahala K.T., Hase T.A., Fotsis T.	Soybean phytoestrogen intake and cancer risk	1995	Journal of Nutrition	609
51	Bettuzzi S., Brausi M., Rizzi F., Castagnetti G., Peracchia G., Corti A.	Chemoprevention of human prostate cancer by oral administration of green tea catechins in volunteers with high-grade prostate intraepithelial neoplasia: A preliminary report from a one-year proof-of-principle study	2006	Cancer Research	602

52	Lee M.-J., Maliakal P., Chen L., Meng X., Bondoc F.Y., Prabhu S., Lambert G., Mohr S., Yang C.S.	Pharmacokinetics of tea catechins after ingestion of green tea and (-)-epigallocatechin-3-gallate by humans: Formation of different metabolites and individual variability	2002	Cancer Epidemiology Biomarkers and Prevention	593
53	Prasad S., Tyagi A.K., Aggarwal B.B.	Recent developments in delivery, bioavailability, absorption and metabolism of curcumin: The golden pigment from golden spice	2014	Cancer Research and Treatment	583
54	Lown K.S., Bailey D.G., Fontana R.J., Janardan S.K., Adair C.H., Fortlage L.A., Brown M.B., Guo W., Watkins P.B.	Grapefruit juice increases felodipine oral availability in humans by decreasing intestinal CYP3A protein expression	1997	Journal of Clinical Investigation	580
55	Bourre J.-M., Francois M., Youyou A., Dumont O., Piciotti M., Pascal G., Durand G.	The effects of dietary α-linolenic acid on the composition of nerve membranes, enzymatic activity, amplitude of electrophysiological parameters, resistance to poisons and performance of learning tasks in rats	1989	Journal of Nutrition	579
56	Anhê F.F., Roy D., Pilon G., Dudonné S., Matamoros S., Varin T.V., Garofalo C., Moine Q., Desjardins Y., Levy E., Marette A.	A polyphenol-rich cranberry extract protects from diet-induced obesity, insulin resistance and intestinal inflammation in association with increased Akkermansia spp. Population in the gut microbiota of mice	2015	Gut	576
57	Saller R., Meier R., Brignoli R.	The use of silymarin in the treatment of liver diseases	2001	Drugs	566
58	Schulze M.B., Liu S., Rimm E.B., Manson J.E., Willett W.C., Hu F.B.	Glycemic index, glycemic load, and dietary fiber intake and incidence of type 2 diabetes in younger and middle-aged women	2004	American Journal of Clinical Nutrition	564
59	Burdge G.C.,	Conversion of α-	2002	British Journal of	562

	Wootton S.A.	linolenic acid to eicosapentaenoic, docosapentaenoic and docosahexaenoic acids in young women		Nutrition	
60	Mishra L.-C., Singh B.B., Dagenais S.	Scientific basis for the therapeutic use of Withania somnifera (ashwagandha): A review	2000	Alternative Medicine Review	562
61	Liu S., Willett W.C., Manson J.E., Hu F.B., Rosner B., Colditz G.	Relation between changes in intakes of dietary fiber and grain products and changes in weight and development of obesity among middle-aged women	2003	American Journal of Clinical Nutrition	561
62	Endo T.R., Gill B.S.	The deletion stocks of common wheat	1996	Journal of Heredity	561
63	Fuchs C.S., Giovannucci E.L., Colditz G.A., Hunter D.J., Stampfer M.J., Rosner B., Speizer F.E., Willett W.C.	Dietary fiber and the risk of colorectal cancer and adenoma in women	1999	New England Journal of Medicine	559
64	Huang M.-T., Ferrara T., Conney A.H.	Inhibitory Effects of Curcumin on in Vitro Lipoxygenase and Cyclooxygenase Activities in Mouse Epidermis	1991	Cancer Research	559
65	Kawamori T., Lubet R., Steele V.E., Kelloff G.J., Kaskey R.B., Rao C.V., Reddy B.S.	Chemopreventive effect of curcumin, a naturally occurring anti-inflammatory agent, during the promotion/progression stages of colon cancer	1999	Cancer Research	554
66	Ludwig D.S., Pereira M.A., Kroenke C.H., Hilner J.E., Van Horn L., Slattery M.L., Jacobs Jr. D.R.	Dietary fiber, weight gain, and cardiovascular disease risk factors in young adults	1999	Journal of the American Medical Association	544
67	Miettinen T.A., Tilvis R.S., Kesäniemi Y.A.	Serum plant sterols and cholesterol precursors reflect cholesterol absorption and synthesis in volunteers	1990	American Journal of Epidemiology	544

		of a randomly selected male population			
68	Huang M.-T., Lou Y.-R., Ma W., Newmark H.L., Conney A.H.	Inhibitory effects of dietary curcumin on forestomach, duodenal, and colon carcinogenesis in mice	1994	Cancer Research	541
69	Chow H.-H.S., Cai Y., Hakim I.A., Crowell J.A., Shahi F., Brooks C.A., Dorr R.T., Hara Y., Alberts D.S.	Pharmacokinetics and safety of green tea polyphenols after multiple-dose administration of epigallocatechin gallate and polyphenon E in healthy individuals	2003	Clinical Cancer Research	539
70	Malcolm L.	Plant sterol and stanol margarines and health	2000	British Medical Journal	539
71	Kuttan R., Bhanumathy P., Nirmala K., George M.C.	Potential anticancer activity of turmeric (Curcuma longa)	1985	Cancer Letters	537
72	Yang C.S., Chen L., Lee M.-J., Balentine D., Kuo M.C., Schantz S.P.	Blood and urine levels of tea catechins after ingestion of different amounts of green tea by human volunteers	1998	Cancer Epidemiology Biomarkers and Prevention	533
73	Kunnumakkara A.B., Guha S., Krishnan S., Diagaradjane P., Gelovani J., Aggarwal B.B.	Curcumin potentiates antitumor activity of gemcitabine in an orthotopic model of pancreatic cancer through suppression of proliferation, angiogenesis, and inhibition of nuclear factor-κB-regulated gene products	2007	Cancer Research	521
74	Araújo C.A.C., Leon L.L.	Biological activities of Curcuma longa L	2001	Memorias do Instituto Oswaldo Cruz	521
75	Li L., Braiteh F.S., Kurzrock R.	Liposome-encapsulated curcumin: In vitro and in vivo effects on proliferation, apoptosis, signaling, and angiogenesis	2005	Cancer	520
76	Pereira M.A., O'Reilly E., Augustsson K., Fraser G.E., Goldbourt U.,	Dietary fiber and risk of coronary heart disease: a pooled analysis of cohort studies	2004	Archives of Internal Medicine	511

	Heitmann B.L., Hallmans G., Knekt P., Liu S., Pietinen P., Spiegelman D., Stevens J., Virtamo J., Willett W.C., Ascherio A.				
77	Hague A., Manning A.M., Hanlon K.A., Hart D., Paraskeva C., Huschtscha L.I.	Sodium butyrate induces apoptosis in human colonic tumour cell lines in a p53-independent pathway: Implications for the possible role of dietary fibre in the prevention of large-bowel cancer	1993	International Journal of Cancer	510
78	Ireson C., Orr S., Jones D.J.L., Verschoyle R., Lim C.-K., Luo J.-L., Howells L., Plummer S., Jukes R., Williams M., Steward W.P., Gescher A.	Characterization of metabolites of the chemopreventive agent curcumin in human and rat hepatocytes and in the rat in vivo, and evaluation of their ability to inhibit phorbol ester-induced prostaglandin E2production	2001	Cancer Research	508
79	Borek C.	Antioxidant health effects of aged garlic extract	2001	Journal of Nutrition	504
80	Charney D.S., Heninger G.R., Breier A.	Noradrenergic function in panic anxiety: Effects of yohimbine in healthy subjects and patients with agoraphobia and panic disorder	1984	Archives of General Psychiatry	499
81	Aggarwal B.B., Shishodia S., Takada Y., Banerjee S., Newman R.A., Bueso-Ramos C.E., Price J.E.	Curcumin suppresses the paclitaxel-induced nuclear factor-κB pathway in breast cancer cells and inhibits lung metastasis of human breast cancer in nude mice	2005	Clinical Cancer Research	497
82	Trock B., Lanza E., Greenwald P.	Dietary fiber, vegetables, and colon cancer: Critical review and meta-analyses of the epidemiologic evidence	1990	Journal of the National Cancer Institute	492
83	Knight D.C., Eden J.A.	A review of the clinical effects of phytoestrogens	1996	Obstetrics and Gynecology	491

84	Weststrate J.A., Meijer G.W.	Plant sterol-enriched margarines and reduction of plasma total- and LDL-cholesterol concentrations in normocholesterolaemic and mildly hypercholesterolaemic subjects	1998	European Journal of Clinical Nutrition	490
85	Chacko S.M., Thambi P.T., Kuttan R., Nishigaki I.	Beneficial effects of green tea: A literature review	2010	Chinese Medicine	489
86	Gupta S.C., Patchva S., Koh W., Aggarwal B.B.	Discovery of curcumin, a component of golden spice, and its miraculous biological activities	2012	Clinical and Experimental Pharmacology and Physiology	483
87	Ostlund Jr. R.E.	Phytosterols in human nutrition	2002	Annual Review of Nutrition	483
88	Adlercreutz H., Bannwart C., Wähälä K., Mäkelä T., Brunow G., Hase T., Arosemena P.J., Kellis Jr. J.T., Vickery L.E.	Inhibition of human aromatase by mammalian lignans and isoflavonoid phytoestrogens	1993	Journal of Steroid Biochemistry and Molecular Biology	480
89	Ireson C.R., Jones D.J.L., Boocock D.J., Farmer P.B., Gescher A.J., Orr S., Coughtrie M.W.H., Williams M.L., Steward W.P.	Metabolism of the cancer chemopreventive agent curcumin in human and rat intestine	2002	Cancer Epidemiology Biomarkers and Prevention	478
90	McIntyre A., Gibson P.R., Young G.P.	Butyrate production from dietary fibre and protection against large bowel cancer in a rat model	1993	Gut	477
91	Awad A.B., Fink C.S.	Phytosterols as anticancer dietary components: Evidence and mechanism of action	2000	Journal of Nutrition	465
92	Narayana K.R., Reddy M.S., Chaluvadi M.R., Krishna D.R.	Bioflavonoids classification, pharmacological, biochemical effects and therapeutic potential	2001	Indian Journal of Pharmacology	463
93	Avorn J., Monane M., Gurwitz J.H.,	Reduction of bacteriuria and pyuria after	1994	JAMA: The Journal of the American	460

	Glynn R.J., Choodnovskiy I., Lipsitz L.A.	ingestion of cranberry juice		Medical Association	
94	Attele A.S., Zhou Y.-P., Xie J.-T., Wu J.A., Zhang L., Dey L., Pugh W., Rue P.A., Polonsky K.S., Yuan C.-S.	Antidiabetic effects of Panax ginseng berry extract and the identification of an effective component	2002	Diabetes	457
95	Das R.K., Kasoju N., Bora U.	Encapsulation of curcumin in alginate-chitosan-pluronic composite nanoparticles for delivery to cancer cells	2010	Nanomedicine: Nanotechnology, Biology, and Medicine	455
96	Bose M., Lambert J.D., Ju J., Reuhl K.R., Shapses S.A., Yang C.S.	The major green tea polyphenol, (-)-epigallocatechin-3-gallate, inhibits obesity, metabolic syndrome, and fatty liver disease in high-fat-fed mice	2008	Journal of Nutrition	449
97	Murkies A.L., Wilcox G., Davis S.R.	Phytoestrogens	1998	Journal of Clinical Endocrinology and Metabolism	449
98	Crespy V., Williamson G.	A review of the health effects of green tea catechins in in vivo animal models	2004	Journal of Nutrition	447
99	Terry P., Giovannucci E., Michels K.B., Bergkvist L., Hansen H., Holmberg L., Wolk A.	Fruit, vegetables, dietary fiber, and risk of colorectal cancer	2001	Journal of the National Cancer Institute	447
100	Geoghegan W.D., Ackerman G.A.	Adsorption of horseradish peroxidase, ovomucoid and antiimmunoglobulin to colloidal gold for the indirect detection of concanavalin A, wheat germ agglutinin and goat antihuman immunoglobulin G on cell surfaces at the electron microscopic level	1977	Journal of Histochemistry and Cytochemistry	445

Table 5: Quantity of Search Results per Herbal Medicine

Common Name (Latin Binomial)	Quantity of Search Results per Herbal Medicine	
	n=	%
Wheatgrass *(Triticum aestivum*)	6596	15.20
Turmeric (*Curcuma longa)*	5815	13.40
Barley (*Hordeum vulgare)*	4413	10.17
Garlic (*Allium sativum)*	3230	7.44
Green Tea *(Camellia sinensis)*	3229	7.44
Beet Root (*Beta vulgaris)*	2126	4.90
Ginseng (*Panax* spp.)	1624	3.74
Milk Thistle (*Silybum marianum)*	1536	3.54
Ginger (*Zingiber officinale)*	1276	2.94
Aloe Vera (*Aloe vera)*	1107	2.55
Plant Sterols	990	2.28
Black Cohosh (*Actaea racemosa)*	957	2.20
Flaxseed Oil (*Linum usitatissimum)*	836	1.93
Fennel (*Foeniculum vulgare)*	763	1.76
Coconut Oil (*Cocos nucifera)*	716	1.65
Cranberry (*Vaccinium macrocarpon)*	640	1.47
Grapefruit (*Citrus x Paradisi)*	607	1.40
Echinacea (*Echinacea* spp.)	605	1.39
Fenugreek (*Trigonella foenum-graecum)*	529	1.22
Valerian (*Valeriana officinalis)*	527	1.21
Garcinia (*Garcinia gummi-gutta)*	501	1.15
Red Yeast Rice (*Monascus purpureus)*	486	1.12
Yohimbe (*Pausinystalia johimbe)*	462	1.06
Goji Berry (*Lycium* spp.)	416	0.96
Ashwagandha (*Withania somnifera)*	386	0.89
Rhodiola (*Rhodiola* spp.)	379	0.87
Saw Palmetto (*Serenoa repens)*	374	0.86

Senna (*Senna alexandrina)*	367	0.85
Horny Goat Weed (*Epimedium* spp.)	333	0.77
Boswellia (*Boswellia serrata)*	247	0.57
Bioflavonoid	225	0.52
Green Coffee (*Coffea arabica)*	203	0.47
Gingko (*Gingko biloba)*	165	0.38
Acai (*Euterpe oleracea)*	146	0.34
Maca (*Lepidium meyenii)*	142	0.33
Ivy Leaf(*Hedera helix)*	131	0.30
Elderberry (*Sambucus nigra* and *Sambucus canadensis)*	126	0.29
Horehound (*Marrubium vulgare)*	81	0.19
Cinnamon (*Cinnamomum* spp.*)*	76	0.18
Apple Cider Vinegar	32	0.07
TOTAL	**43403**	**100**

Figures

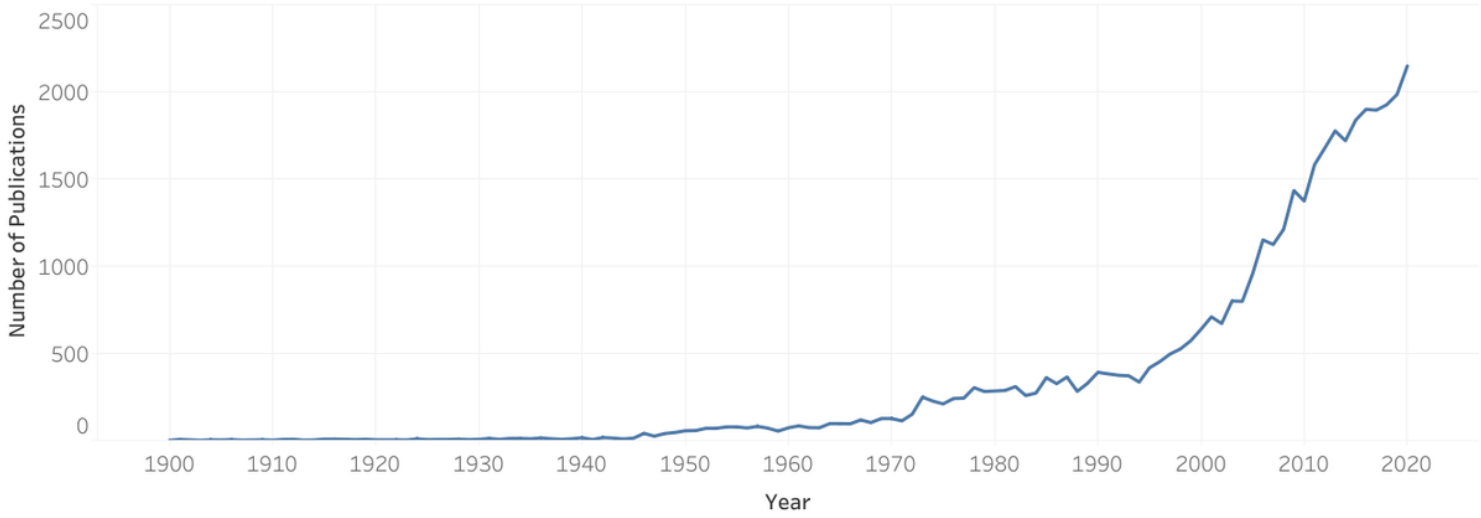

Figure 1

Number of Herbal Medicine Publications per Year from 1827-2021

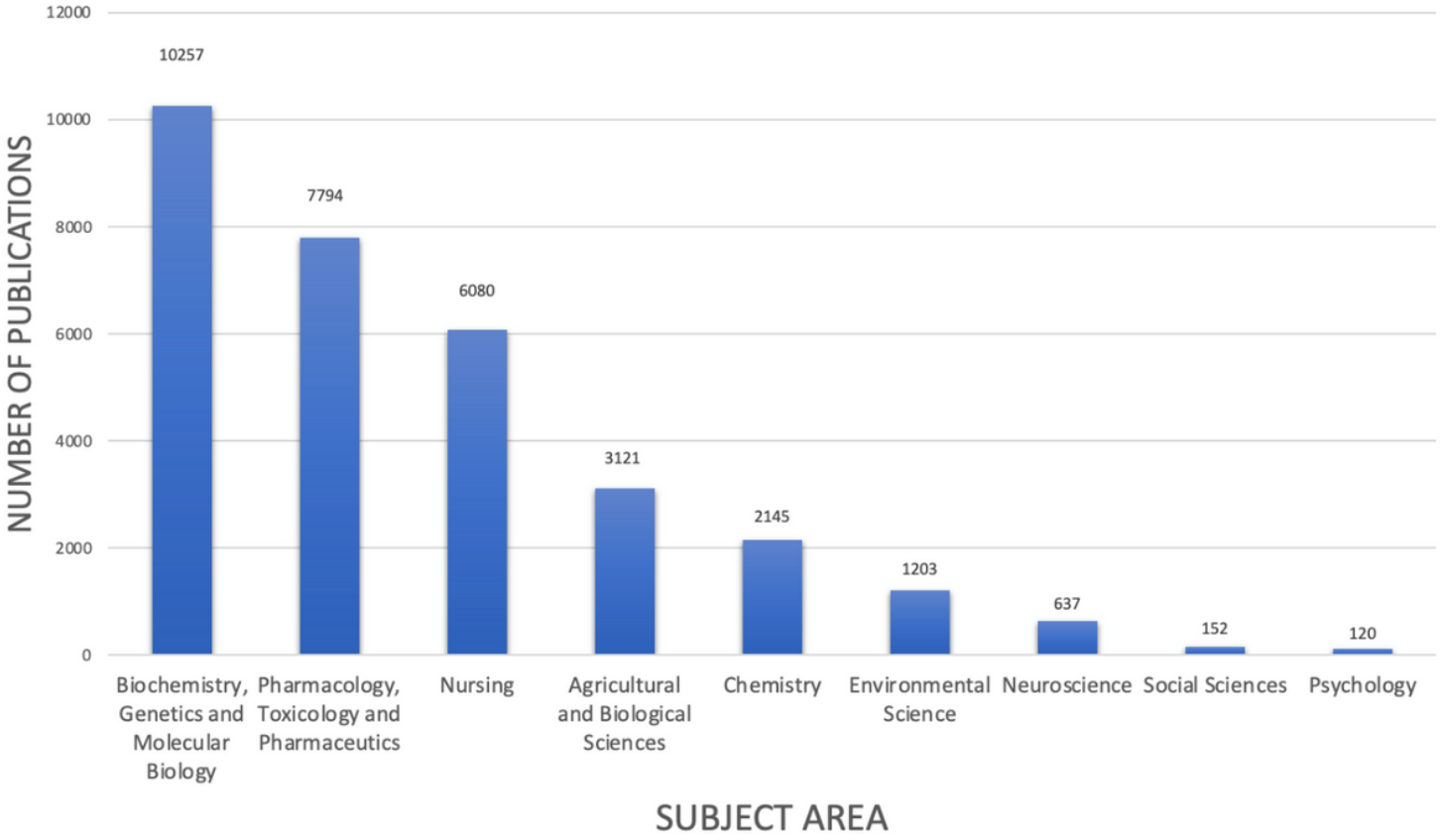

Figure 2

Breakdown of Publications by Subject Area

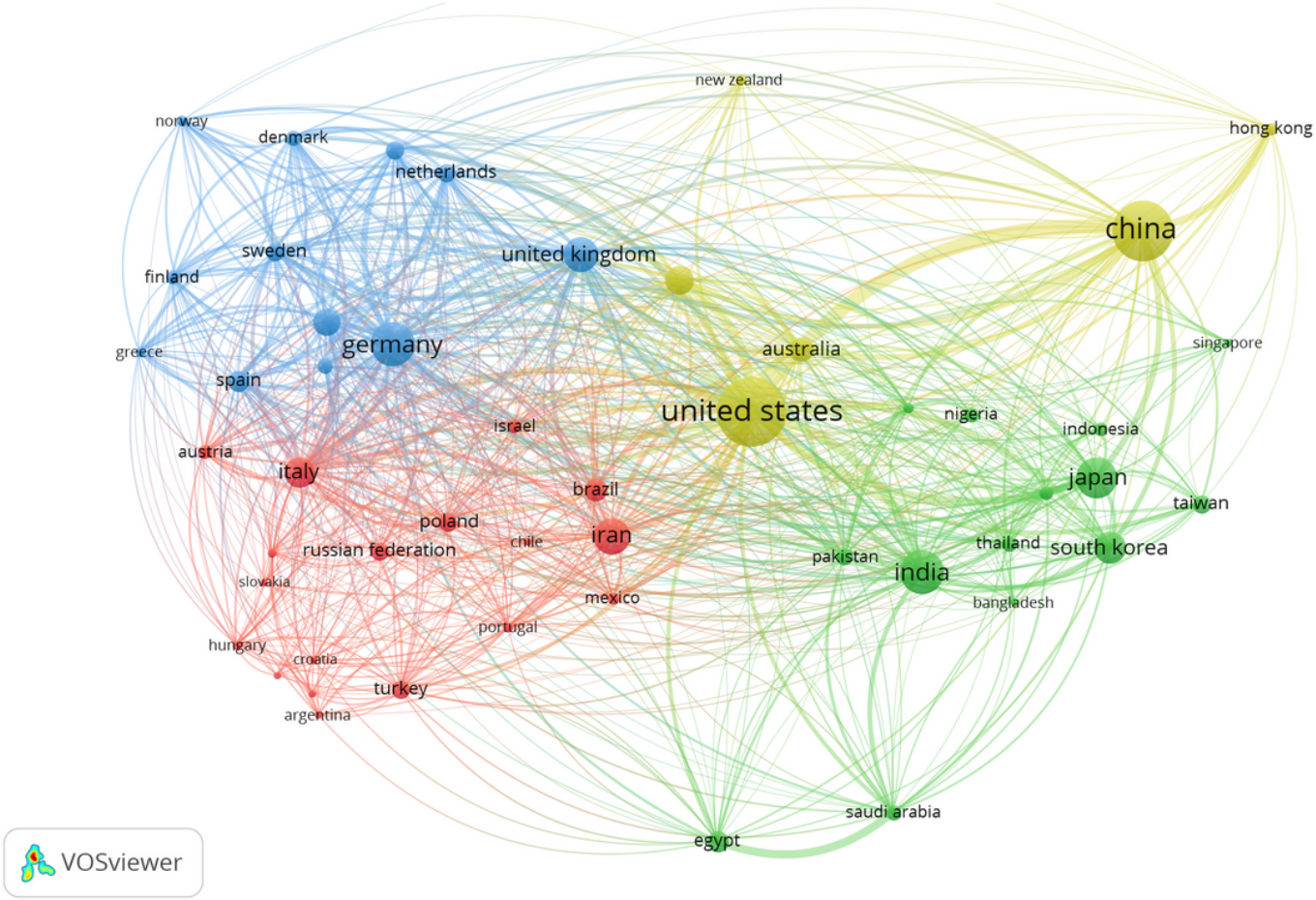

Figure 3

Co-Authorship Analysis of the 50 Most Productive Countries

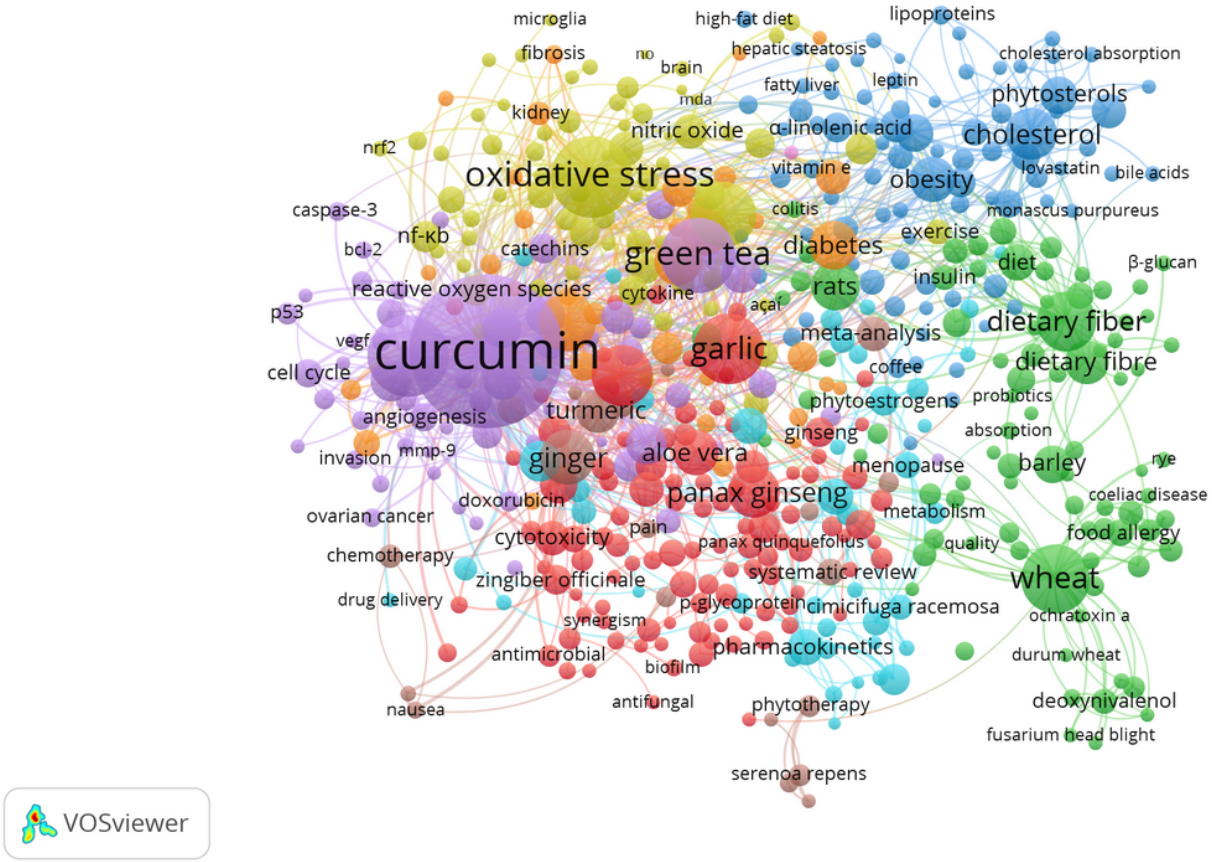

Figure 4

Co-Occurrence Analysis of the 500 Most Frequent Author Keywords

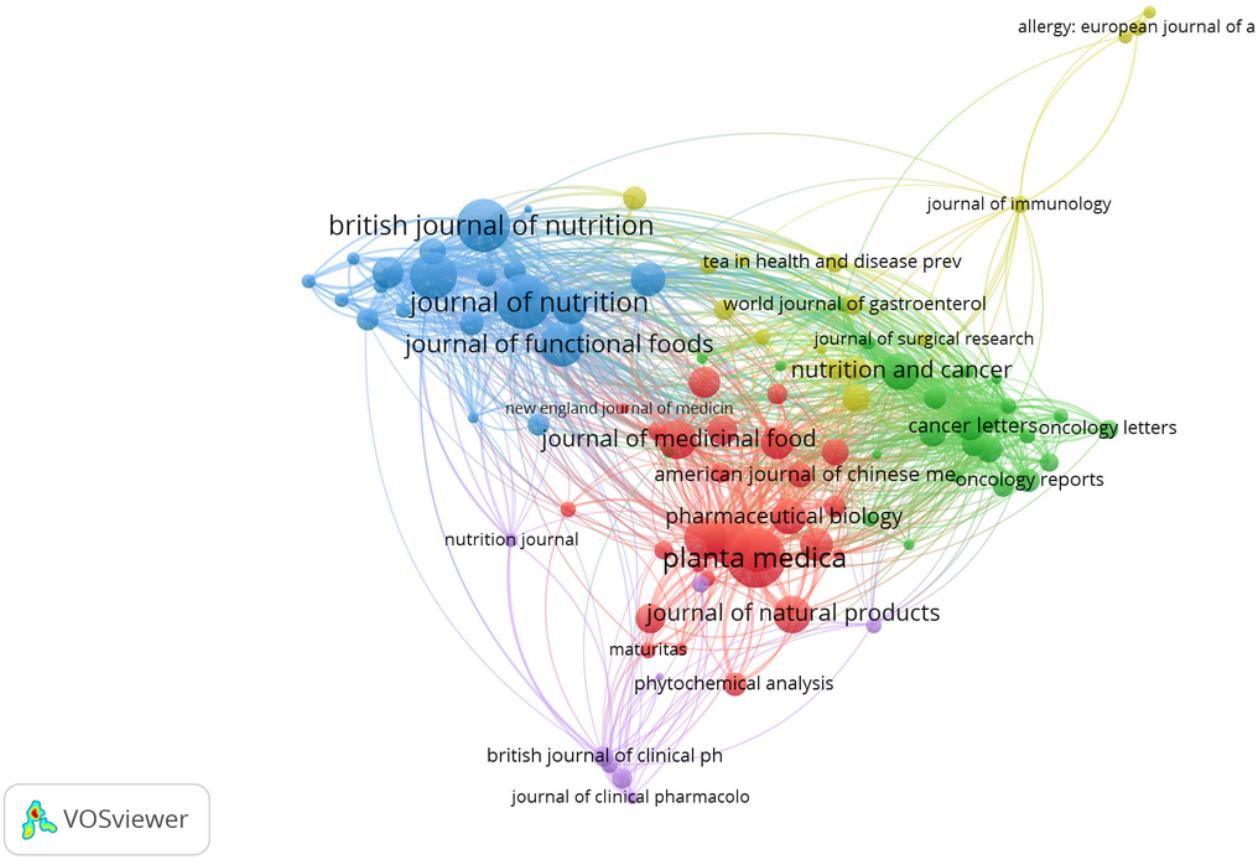

Figure 5

Citation Analysis of the Top 100 Sources

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- SupplementaryFile1Jan2022.docx