Analyzing Literature on Drugs with Web of Science and HistCite: Institutional Affiliations of Most Prolific Authors Publishing on Atorvastatin (Lipitor)

Svetla Baykoucheva, White Memorial Chemistry Library, University of Maryland, College Park, MD 20742 USA, *sbaykouc@umd.edu*

HIGHLIGHTS

The current aggressive tactics of pharmaceutical companies to promote their drugs directly to consumers makes it important to researchers, physicians, and the general public to know what the affiliations and co-authorships of those publishing on these drugs are. The most widely used database for retrieving biomedical literature is MEDLINE/PubMED, because it is a comprehensive and free resource. New refining and analytical tools available from the Web of Science (WoS), though, allow performing a much more in-depth analysis of the literature in a particular field. WoS has recently become even more attractive to researchers with the addition of HistCite, a program that allows identifying the key literature and reconstructing the history and development of a particular research field.

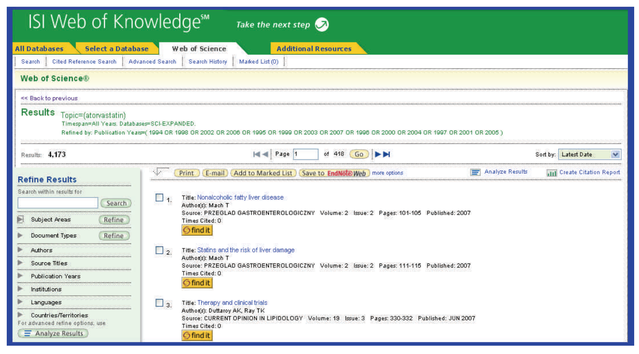
This study examines the institutional affiliations and co-authorships of the most prolific authors who have published articles on the cholesterol-lowering drug Atorvastatin (Lipitor). The literature on the latter was chosen because this drug has been on the market for a long time and it is currently the most prescribed drug in the world. Since WoS is usually not the preferred database for retrieving biomedical literature, the number of documents published on Atorvastatin that were retrieved from the WoS was compared to the number of documents retrieved through MEDLINE.

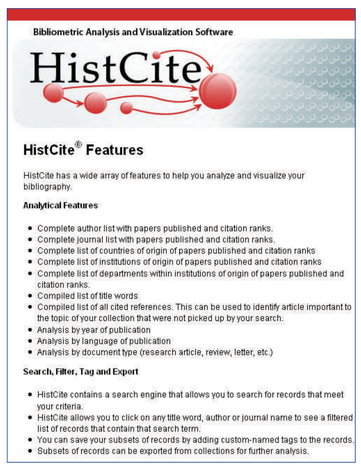
The HistCite software allows performing in-depth analysis of the scientific literature, but it can be used only with the WoS. In order to justify the use of WoS in this study (MEDLINE is considered the standard database for retrieving biomedical literature), the performance of WoS was compared to the performance of MEDLINE. Identical searches were performed in both WoS and MEDLINE and the results were limited to documents published on atorvastatin from 1994 to 2007. WoS retrieved more documents than MEDLINE (4,173 and 2910, respectively), for the period under study, and performed equally well or even better with respect to the number of documents retrieved for each year (See graph below).

Databases: Web Of Science® (WoS) (Vendor: Thomson Reuters); **MEDLINE,** accessed through SciFinder **Scholar®** (Chemical Abstracts Service)

Software: HistCite® (Vendor: HistCite Software LLC); created by Dr. Eugene Garfield, the creator of the Science Citation Index and founder of the Institute for Scientific Information (ISI)

Screen captures from the Web of Science (WoS) showing results of a search on "atorvastatin," limited to documents published from 1994 to 2007.





HistCite Analysis of the Literature Published on Atorvastatin (1994-2007): List of all records; Country list; Journals that have published the highest number of articles; Most cited documents; Historiography of the top 20 most cited papers (in the collection of documents published on atorvastatin from 1994 to 2007), showing the relationships (citations) between them.

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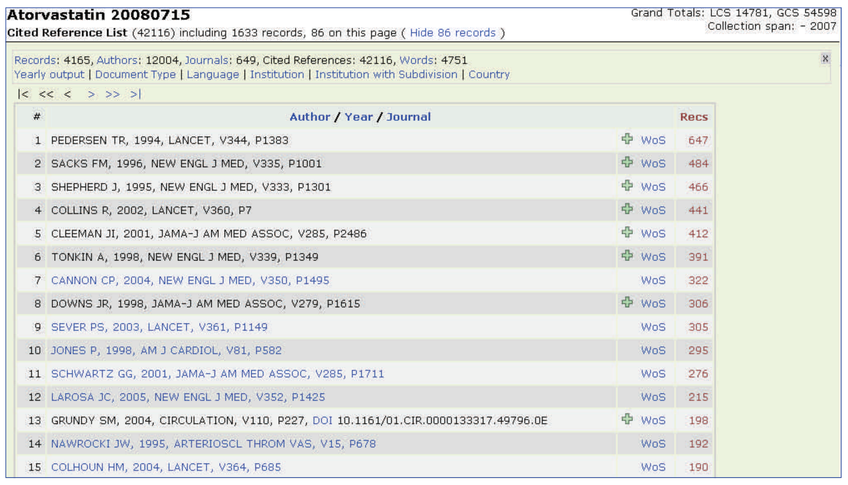
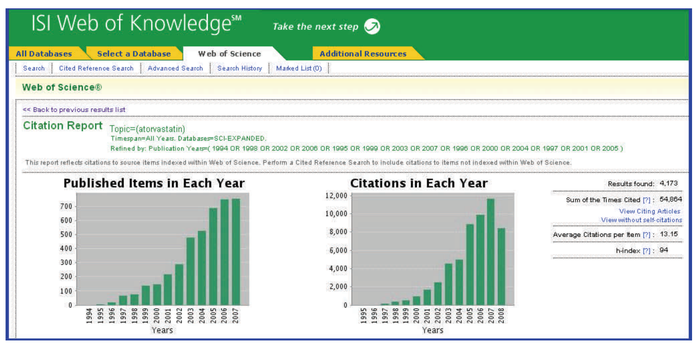


HistCite Analysis of the Top 20 Most Prolific Authors

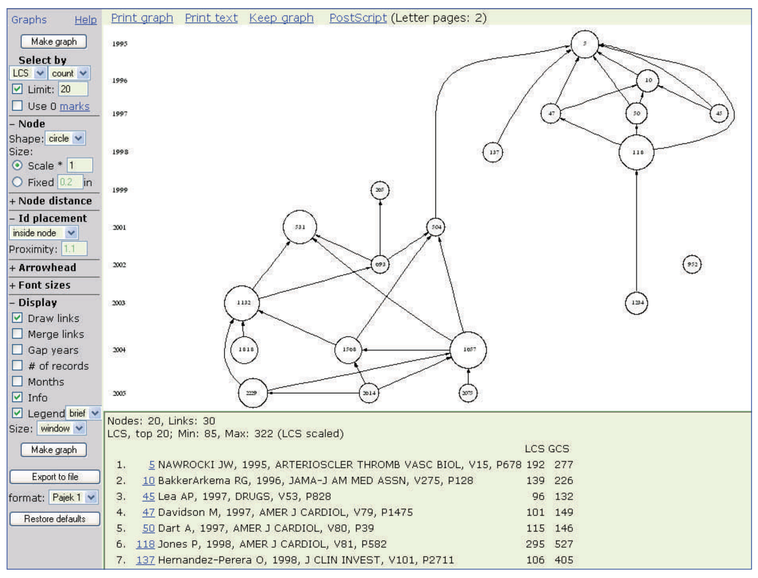
#	Author	Recs	TLCS	TGCS	Company Association
1	Hernandez G	57	401	1440	Yes[1]
2	Mikhailidis DP	49	264	803	No
3	Kastelein JJP	48	584	1657	Yes[1]
4	Diaz C	45	380	1364	Yes[1]
5	Egido J	44	241	931	Yes[1]
6	Ballantyne CM	41	345	1153	Yes[2]
7	Stefanadis C	41	23	72	No
8	Davidson MH	39	606	1174	Yes[2]
9	Elisaf M	38	203	625	No
10	Szarek M	38	323	843	Yes[2]
11	Cannon CP	35	578	2124	Yes[2]
12	Olsson AG	35	664	1877	Yes[1]
13	Athyros VG	34	291	851	No
14	Black DM	34	662	1095	Yes[2]
15	Blanco-Colio LM	32	116	525	Yes[1]
16	Tousoulis D	32	23	71	No
17	Martin-Ventura JL	28	58	197	Yes[1]
18	Schwartz GG	28	451	1404	Yes[1]
19	Steinman L	28	94	456	No
20	Birnbaum Y	27	37	137	No

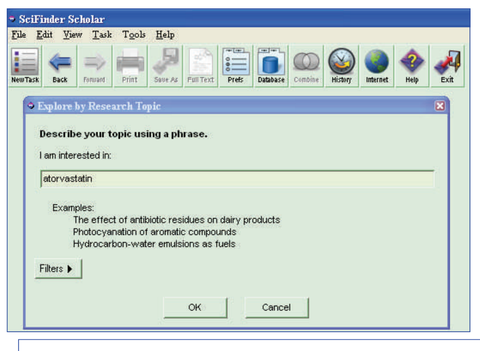
[1] Co-authored papers with authors employed by Pfizer
[2] Co-authored papers with authors employed by other than Pfizer companies

GCS - Global Citation Score shows the total number of citations to a paper in the Web of Science.
LCS - Local Citation Score shows the count of citations to a paper within the collection
T* - Total [score] Any Total score represents a sum of respective scores for all records from a given author, source, other category, or all records. e.g. TLCS = Total Local Citation Scores.

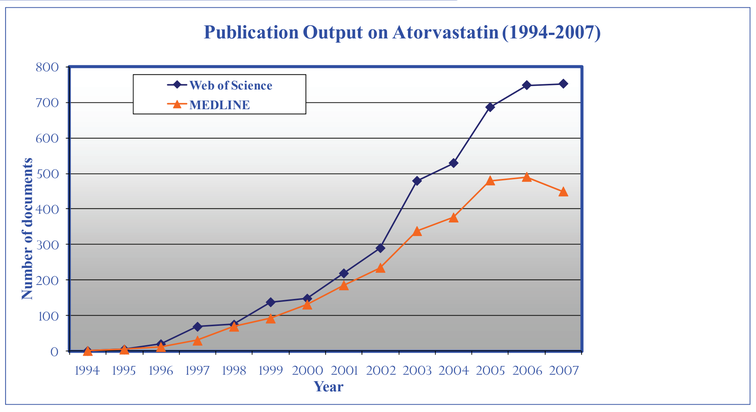


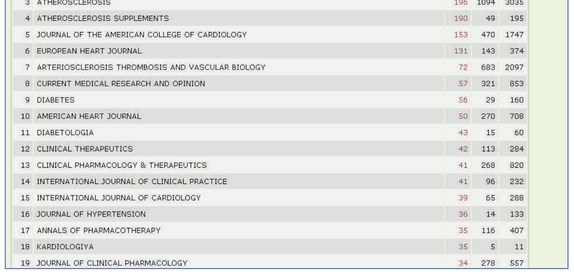
One of the key features of HistCite is the ability to create historiographs, which are graphs showing the time line of publications in a collection, with arrows indicating the citation links. The figure below shows the relationships between the 20 most cited papers in the collection of documents published on atorvastatin between 1994 and 2007.





Screen capture of the search screen of SciFinder Scholar (MEDLINE was accessed through SciFinder Scholar.)





Conclusions

WoS performed equally well or even better than MEDLINE in retrieving literature on Atorvastatin, which allows using it in conjunction with HistCite.

HistCite is a powerful tool for analyzing the scientific literature that can also be used to correct errors in documents retrieved with WoS. For example, an article on atorvastatin that was included in the most cited papers list for this selection was not present on the list of the documents retrieved from WoS, because the word "atorvastatin" was misspelled in the title of the article.

A significant number of the top 20 most prolific authors had relationships, either directly (through financial support or employment), or indirectly (through co-authorships), with Pfizer (the company that makes Atorvastatin) or with other pharmaceutical companies making similar drugs.

Pfizer is the institution that has published the highest number of documents on Atorvastatin.

Methods and approaches used in this study can easily be adapted to evaluate the literature in any other field.