

PERSPECTIVES

Healthy Foods Research: A Publication Strategy To Maximize Impact

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Intense current interest in healthy foods, combined with new technologies in communication, have prompted changes in the *Journal of Agricultural and Food Chemistry (JAFCh)* to allow it to remain a primary means for disseminating new research information about the chemistry of foods and agriculture. *JAFCh* has added categories covering bioactive substances that may contribute to health benefits of foods, molecular nutrition, and safety and toxicology in order to highlight these topics along with its traditional coverage of food chemistry, analytical methods, and composition of foods. *JAFCh* has also increased the speed of manuscript processing and its international presence. The changes at the *Journal* enable scientists in publicly funded laboratories, universities, and other research organizations to increase their emphasis on information dissemination and technology transfer. Scientists working in the broad area of foods and health now have various paths for relaying research results promptly to the many constituencies in this topical area, but *JAFCh* retains its status as a primary peer-reviewed vehicle for dissemination.

KEYWORDS: Health; food; chemistry; information dissemination; technology transfer

INTRODUCTION

Changes in communication technology have not affected the demand by researchers in academia, government, and industry for rapid, worldwide dissemination of their work via peer-reviewed papers. In reporting the results of investigations into the chemical basis of health benefits attributed to fruits, vegetables, tree nuts, and grains, as well as fish, seafood, and some meat and dairy products, the *Journal of Agricultural and Food Chemistry (JAFCh)* has long been a viable choice for authors. *JAFCh*, published by the American Chemical Society (ACS), celebrated its 50th anniversary in 2002, serving agricultural and food chemists in North America and, particularly in recent years, worldwide. In 2007 *JAFCh* retained its position as the most cited journal in agriculture, applied chemistry, and food science and technology.

JAFCh presently publishes manuscripts within 13 subject categories (Table 1). For the past few years, the three most popular categories have been, in descending order, Food Chemistry/Biochemistry, Analytical Methods, and Bioactive Constituents. From time to time, existing categories have been

renamed, combined, split apart, added, or dropped. The latest category revision (for 2008) updated several category names and split the Safety/Toxicology category into two new categories, Chemical Aspects of Food Safety and Toxicology in Agriculture and Food. Issues such as these are first discussed and approved by the *JAFCh* Advisory Board—a 43-member group of international experts in agricultural and food chemistry appointed by the American Chemical Society's Publication Division to advise the Editor and Associate Editors on policy

Table 1. Manuscript Categories in the *Journal of Agricultural and Food Chemistry* for 2008, with the Number of Manuscripts Published in Each Category during 2007

Bioactive Constituents (264)
Food Chemistry/Biochemistry (260)
Analytical Methods (211)
Chemical Changes Induced by Processing/Storage (141)
Chemical Composition of Food/Feeds (104)
Flavors and Aromas/Chemosensory Perception (96)
Chemical Aspects of Food Safety ^a
Toxicology in Agriculture and Food ^a
Chemical Aspects of Biotechnology/Molecular Biology (57)
Environmental Chemistry (44)
Molecular Nutrition (44)
Crop and Animal Protection Chemistry (38)
Biofuels and Bioproducts Chemistry (25)

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^a The Toxicology/Safety category that existed in 2007 had 69 manuscripts. For 2008 it has been split into the two new categories indicated.

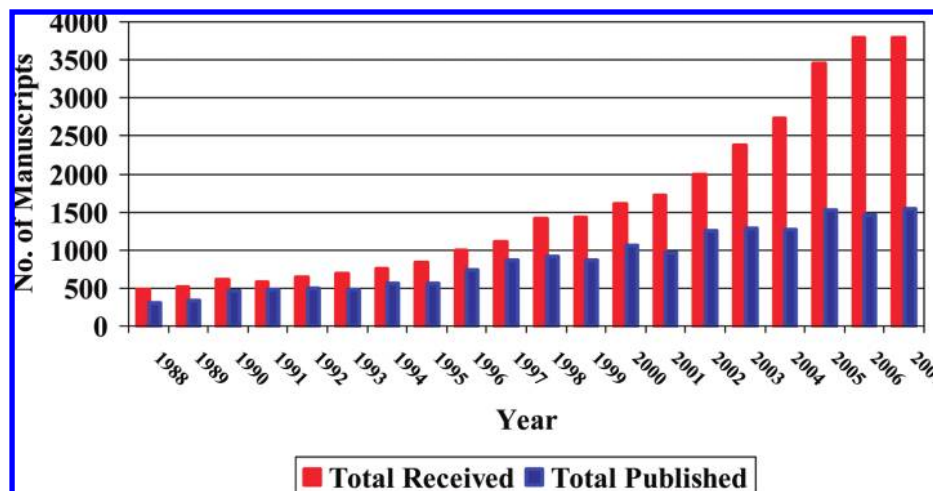


Figure 1. Numbers of manuscripts received and published by *J. Agric. Food Chem.*, 1988–2007.

matters and procedures. The *Journal's* Bioactive Constituent category is “home” to many manuscripts reporting on bioactive chemicals—identification, sources, concentrations, health-promoting activity, etc. As part of the surge in interest in health-beneficial components of foods, manuscripts published in *JAFAC* reporting on antioxidants in foods (as assessed from the title, abstract, or keywords) have increased markedly in number, from 36 in 1997 to 175 in 2006. Similarly, manuscripts reporting on cholesterol levels in people or experimental animals, or closely related topics such as coronary disease or diabetes associated with diet, increased from 10 in 1997 to 39 in 2006.

The attention given to antioxidants and other naturally occurring health-beneficial chemicals in foods is also reflected in reviews published in 2005. The most heavily cited review, by far, was “The Chemistry behind Antioxidant Capacity Assays” (1), which has been cited 140 times by other authors since it was published, less than 3 years ago. Two other reviews in 2005 that have been heavily cited were on the recovery of biophenols from olive mill waste (2) (cited 22 times to date) and another on the application of biosensors to fresh produce and the food industry (3) (cited 16 times to date).

Largely fueled by the interest in healthy foods and resulting research, which engages an increasing number of scientists in academia, industry, and federal/state research organizations, the number of manuscripts submitted each year to *JAFAC* has increased 8-fold in the period from 1988 to 2007 and approached 4000 in 2006 and 2007 (Figure 1). Currently, 55–60% of submitted manuscripts are rejected. Among the reasons for rejection are (1) out of scope, usually because of lack of sufficient chemistry, or (2) failure to survive peer review, a process that entails scientific review by experts in the field of a manuscript's subject area, judging the quality aspects of a manuscript, including novelty, experimental design, and interpretation of results.

One measure of the impact of research published in *JAFAC* is the total citations to the manuscripts published. According to the 2006 *Journal Citation Reports*, by the end of 2006 *JAFAC* had been cited more than 37,636 times, making it the most cited journal in the categories for Multidisciplinary Agriculture, Applied Chemistry, and Food Science and Technology. For 2006, *JAFAC* had an Impact Factor of 2.322, ranking first among the 31 journals in the Multidisciplinary Agriculture category (median 0.395), seventh among the 58 journals in the Applied Chemistry category (median 0.839), and eighth among the 96 journals in the Food Science and Technology category (median 0.857) (4). (The Impact Factor for 2006 is the sum of all

manuscripts published in a journal during 2004 and 2005 divided into the citations to those manuscripts during 2006.)

Still another parameter important to authors who strive for recognition by peers in their field of research is turnaround time. For *JAFAC*, despite the exponentially increasing load of manuscripts submitted, the time from receipt to acceptance has steadily decreased since 1998, and in 2007 averaged less than 13 weeks. The time from receipt to Web publication is only 18 weeks on average, and from receipt to print it is about 22 weeks. That is, in less than 6 months, on average, from submission to print, authors complete a sequence that includes assignment of the manuscript to an associate editor, routing for review, receipt of at least three completed reviews, revision, galley proof correction, and publishing of the final, permanent version of the manuscript.

JAFAC and ACS can add more value by calling newsworthy manuscripts to the attention of secondary media—newspapers, trade journals, science news journals, and electronic news service lists. For example, a manuscript recently published in *JAFAC* “Effects of Different Cooking Methods on Nutritional and Physicochemical Characteristics of Selected Vegetables”, by C. Miglio et al. (5), generated secondary publicity in the *London Times*, *Daily Telegraph*, *Foodnavigator.com*, and *WISU.com* during December 2007, while still listed in the ASAP section, prior to its publication in the first 2008 print issue of *JAFAC*. Another manuscript, “Red Grapefruit Positively Influences Serum Triglyceride Levels in Patients Suffering from Coronary Atherosclerosis: Studies in Vitro and in Humans” (6) was cited by the *New York Times*, *Jerusalem Post*, *London Guardian*, *Washington Post*, *Health & Medicine Week*, *Life Science Weekly*, *Cardiovascular Week*, and *World Disease Weekly*. Still another published manuscript, “Comparison of the Total Phenolic and Ascorbic Acid Content of Freeze-Dried and Air-Dried Marionberry, Strawberry, and Corn Using Conventional and Sustainable Agricultural Practices” (7), was quoted in *The New York Times*, *Philadelphia Inquirer*, *The Straits Times* (Singapore), *Business Day* (South Africa), and *Sydney Morning Herald*, among others, and was cited 80 times by other authors of scientific publications. The results were controversial and generated a Comment (8) and Rebuttal (9) as well as Editor's guidelines for experimental design, sampling, and statistical analysis for authors reporting comparative studies of this type, which accompanied the Comment/Rebuttal papers (10). A 2007 article by the same group of researchers, “Ten-Year Comparison of the Influence of Organic and Conventional Crop Management Practices on the Content of Flavonoids in Tomatoes” (11), has

Table 2. Top 10 Submitting Countries^a

rank	2003	2007
1	United States (418)	China (507)
2	Spain (297)	United States (486)
3	Japan (189)	Spain (390)
4	Italy (159)	Italy (245)
5	Taiwan (109)	Taiwan (221)
6	France (107)	Japan (189)
7	China (103)	France (156)
8	India (84)	Korea (139)
9	Germany (76)	India (130)
10	Brazil (59)	Brazil (110)

^a Ranked by number of manuscripts submitted in 2003 vs 2006.

also generated quite a bit of interest from the press. The newsworthiness of manuscripts can be flagged by the authors and/or editors prior to publication, with the possible result that a press release can be generated by the authors' home institution or by the ACS. In addition, the ACS maintains a special Webpage at the *JAFAC* Website called "*JAFAC* In the News", which lists manuscripts presenting research that has received attention from a variety of news media.

Part of the reason for the increasing number of manuscripts submitted to *JAFAC* and related journals derives from publication requirements upon faculty in academia, graduate and postdoctoral students, scientists in publicly funded organizations such as the USDA's Agricultural Research Service, and some private organizations that their research output be published in peer-reviewed journals. The expectation is mirrored in many countries, both developed and developing (Table 2). China, India, and Brazil are now in the top 10 countries submitting manuscripts to *JAFAC*. In 2007 China became first in the ranking of submitting countries. The United States was second and Spain, third. Developing countries still fall short of many developed countries in terms of percentage of manuscripts accepted and published, owing to above-average reject rates, but this gap is closing as the ACS and *JAFAC* interact directly with authors via visits (*JAFAC* Editors have visited China and Brazil in 2006 and 2007) and author training and as *JAFAC* adds editorial offices outside North America (in 2007, these totaled four: Spain, Germany, Australia, and the People's Republic of China).

JAFAC continues to attract new authors by broadening the scope (categories such as Biotechnology and Biofuels and Bioproducts Chemistry have been added since 2000). In the case of crop biotechnology, *JAFAC* published a research manuscript (12) and Perspective (13) describing the new intragenic, or all-native, DNA transformation method that addresses many of the perceived risks associated with older plant transformations, which involved transfer of "foreign" DNA. Perspectives are particularly useful in highlighting a new technology that may be of general interest but does not yet have the publication history that would warrant a full review. *JAFAC* is also active in new technologies addressing food safety (14), including the use of natural antibacterial agents in fruit- or vegetable-based films (15). In the latter example, Dr. McHugh achieved further impact by transferring her USDA technology to industrial partners, via Cooperative Research and Development Agreements (CRADAs), assigning patent rights to partners, and other technology transfer mechanisms.

In sum, *JAFAC* and other peer-reviewed journals play an important role in helping scientists achieve impact for their research. Authors can opt to present results at scientific meetings [e.g., meetings of the ACS, Institute of Food Technology, Fruit

and Vegetable (FAV) meetings], publish in peer-reviewed journals (or file patent applications—this is a viable alternative for scientists in most organizations), publish in trade journals (after the peer-reviewed publication appears), and issue press releases and/or E-updates through Webpages or electronic mailing lists. Astute authors increasingly utilize many or all of the above to maximize the visibility and impact of their work.

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