



QUARTERLY NEWSLETTER

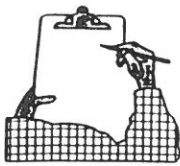
**VOLUME 16, NO. 1
OCTOBER, 1993**

The CAFS NEWSLETTER is published quarterly by CAFS for its members. Contributions of articles or news should be sent to the Editor-in-Chief: Mr. Jit F. Ang, Protein Technologies International, Checkerboard Square - 4RN, St. Louis, MO 63164 or FAX No. 314-982-3960.

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STATEMENT OF POSITION: The Chinese American Food Society (CAFS) is a non-political and non-profit organization dedicated to the scientific and professional betterment of its members. The members of CAFS wish to interact with all scientists based on common cultural and scientific interests. CAFS takes no political stand or preference. Selection of materials for all CAFS publications is based on the scientific content and general interest. Any inadvertent connotation should not be deemed as the official position of CAFS.



EDITORIAL

Grace Lo called one day and asked if I would be interested in assisting the CAFS with its Quarterly Newsletter. Not knowing what I was getting myself into, I readily consented. The thought of being responsible for editing a newsletter may initially appear to be overwhelming. However, like most other things, it is an educational and learning process. The CAFS Newsletter is the most important linkage this society has with its 300 odd members. It is our hope that this issue of our Newsletter will begin a new era for CAFS, which in a longer run will contribute in part to the success and progress of this society. What will be expected in the upcoming issues? We are flexible and would like to hear from all our concerned members as to their likes and dislikes. Your contribution, whether in the form of a letter or an article, is greatly encouraged. On the Editorial part, we will focus in and expand on areas of interest while minimizing coverage in areas which our readers have expressed indifference. As a team, we can strive together for the advancement of CAFS as a professional society that is highly recognized.

Jit F. Ang



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MESSAGE FROM THE CAFS PRESIDENT

September 12, 1993

Dear CAFS Members & Colleagues:

The mission of the Chinese American Food Society (CAFS) is to promote advancement of food science and technology through its common cultural and scientific interests. Because of our unique background, we have a rich cultural resource and strong aspiration to bring more innovations to the field of food science and technology.

Professor Hang, 1993-94 CAFS president-elect, and I would like to reiterate our mission and objectives listed below:

Quarterly Newsletters

To provide timely information on the activities of the Society, technical advances, matters of common interest, and the usual who-what-when-where.

Membership Directory

To facilitate the communication and interactions among members. Each member's interest or specialty is listed in the Directory.

Annual Meeting, Forum and Workshop

To promote proactive spirit among the members; provide forums and workshops for exchange of ideas and share experiences.

Employment Services

To help members to contact potential employers and provide food companies with quality candidates.

Technical Consultation

To provide services to companies or organizations in or outside U. S.

Awards and Scholarship

To honor outstanding professional and student members. CAFS also contributes to graduate assistantship to qualified individuals and institutions.

In order to achieve our mission and objectives, we have identified several specific goals:

1. Establish a strategic planning committee to set direction for the next 3 to 5 years with some specific goals as a yard stick for measuring the effectiveness of the organization.
2. Use newsletter as a communication and marketing tools to promote CAFS image and market CAFS's services.
3. Establish a membership network based on geographic locations with coordinators to encourage membership sharing information.
4. Increase the visibility of CAFS among other organizations with similar interests.
5. Increase our cash reserve to strengthen our organization's position in providing continued support to all our objectives.

We realize that some of these goals will not have an immediate result; but the sooner we start, the sooner we can benefit. For example, to increase CAFS visibility, I have asked Drs. Alice Cha and Bonnie Sun, with the

assistance from Prof. Daniel Fung, to organize a symposium at the annual IFT meeting with a proposed theme of "Technical Development Challenges of Ethnic Foods for the Global Market". We hope this topic will be more appealing attract a wide range of audience and to be accepted by IFT program committee for two reasons: (a) increasing popularity of oriental foods in the U.S. and (b) expected shift of global economy to Asian countries.

Since the CAFS Newsletter is the only visible quarterly publication representing our society, we need to utilize it to: promote our activities and services, provide a forum for exchanging technical ideas, increase our awareness in state-of-the-art technologies, and strengthen communications between members. Unfortunately Dr. Ada Chen, due to her increasing professional and personal commitments, could not continue as the Editor-in-Chief for our Newsletter. Therefore, I am pleased to introduce Mr. Jit Ang as the new Editor-in-Chief. We appreciate Ada's dedication during her tenure and look forward to having her continued support. Please send your contributions directly to Mr. Ang at Protein Technologies International, Checkerboard Square, St. Louis, MO 63164 (FAX No. 314-982-3960).

How to increase the visibility of CAFS is a challenging task that requires

extraordinary effort to achieve. Your cooperation and support are essential for this process. Therefore, all members are encouraged to participate, for together, as a team, we can make CAFS a better organization and a more effective liaison between the industry, academia and government agencies. I know we can count on you to make CAFS a stronger organization. Several working committees have been established. I encourage you, based upon your interest and expertise, to join a committee by calling respective committee chairperson.

In closing, I would like to extend our most sincere appreciation to the Chinese Youth Commissions for donating \$500 to support our activities. In addition, I would like to acknowledge the cash donations and door prizes for our 1993 annual meeting in Chicago by the International Baker Service, Inc., Protein Technologies International (Fiber Sales & Development Corp.), Lifewise Ingredients, Inc., the Anheuser-Busch Company, and the Minh Food Corp. Their generous contributions have made our annual meeting more memorable and we look forward to having their continued support in the future. Last but not least, we welcome all donations from corporations, government agencies, and individuals to help us carry out our mission and objectives.

Grace S. Lo, Ph.D.



CAFS Working Committees

1. **Strategic Planning Committee** - to set strategic directions and goals for the next 3-5 years:
Co-chaired: Mr. Jit Ang (314) 982-2631
Dr. David Chou (314) 982-3100
2. **Membership/Public Relation** - to establish membership network based on geographic locations and promoting CAFS image :
Chairperson : Dr. Cathy Ang (501) 543-7400
West Coast : Ms. Angel Yang (714) 680-2122
North East : Dr. Alice S. Cha (914) 335-6162
South East : Dr. Yen-Con Hung (706) 228-7284
Midwest : Ms. Grace Ruyg-Yi Yao (312) 927-6622
South West : Need Volunteer (Please contact Dr. Cathy Ang)
3. **Annual Meeting** - to organize annual member's meeting on all aspects :
Chairperson : Dr. Yong Hang (315) 787-2265
4. **Technical Consultation Services** - to serve as liaison, provide consultation opportunity and services, and organize technical workshops:
Chairperson : Dr. Shu-Chi Lee (708) 646-7918
5. **Employment Services** - to advertize employment opportunities for employer and individual CAFS members:
Chairperson : Dr. Romeo Leu (713) 475-1970 or
1-800-Egg-Roll
6. **Fund Raising Committee** - to recruit corporation members or using other means to increase cash reserves:
Chairperson : Dr. Emil An-I Huang (612) 481-2688
7. **Award Committee** - to review and recommend recipients for special awards:
Chairperson : Dr. Chi-Tang Ho (908)-390-2145
8. **Publication Committee** - to include newsletter, membership directory, symposium proceedings:
Newsletter
Editor-in-Chief: Mr. Jit Ang (314) 982-2631
(314) 982-3960 (FAX)
Directory : Dr. Wai-Kit Nip (808) 956-3852
(808) 956-3842 (FAX)
Symposium
Proceedings : Dr. Yao-Wen Huang (404) 548-2973
9. **Annual Symposium/Forum** - to work with IFT to organize annual symposium/Forum
Co-Chair : Dr. Alice S. Cha (914) 335-6162
(914) 335-6845 (FAX)
Dr. Bonnie Sun (886-02) 462-9125
(886-02) 700-4489 (FAX)
10. **Nomination Committee** - to nominate 1994-1995 CAFS officers:
Chair: Dr. Sam K. C. Chang (701) 237-7485

CAFS FINANCIAL REPORT
 Prepared by T.C. Chen on Sept. 20, 1993



DESCRIPTION	INCOME	EXPENSE	BALANCE
Checking Account (First Fed Bank, Acct. No. 0-01060-161886)			
Beginning Balance as of 3/16/93			1933.42
Membership Dues Received	1810.00		3743.42
Cash Donations for Door Prizes:			
Baker Int'l Services, Inc.	250.00		
Lifewise Ingredients	50.00		
Donation from CCNAA	500.00		
Interest (3/16/93 to 8/16/93)	18.41		4561.83
Banquet Fee Collection	3265.00		7826.83
Banquet Dinner Cost		3586.00	4240.83
Student Award		100.00	
Cash for Door Prizes		300.00	
Plaque and Nametag		135.08	
Annual Meeting Equipment Rental		76.00	
Newsletter Printing & Mailing		761.57	
Past Forum Printing Cost		516.60	
Treasurer's Assistant		50.00	2301.58
Savings Account (First Fed Bank, Acct. No. 0-01-02-108407)			
Beginning Balance as of 12/31/92			8497.14
Interest (3/16/93 to 6/30/93)		121.98	8619.12

MEMBERSHIP CATEGORIES AND ANNUAL DUES

<u>Category</u>	<u>1993-1994</u>	<u>1994-1995</u>
Active Member	\$15.00	\$20.00
Associate Member	\$15.00	\$20.00
Student Member	\$5.00	\$10.00
Life-Time Member	\$200.00	\$300.00
	(Payable only once in your lifetime)	
Corporate Member	\$200.00	To be Determined



Highlights of 1993 Annual CAFS Meeting

Prepared by Grace S. Lo



The 1993 annual membership meeting was a big success with special thanks to Grace and Mike Yao for arranging a wonderful banquet. Although only 70 members took advantage of the pre-registration privilege, there were close to 170 people who showed up. Mr. Al Clausi, the keynote speaker, shared his viewpoint on the trend of global economy, and indicated that the future will be in Asia, especially in far east and southeastern countries. Mr. Moses Shang, Chairman from US-American Economic & Trading Council encouraged CAFS to take the lead in establishing food technology forum, seminar and conference for China and the U.S.

Cathy Ang, Chairwomen of Award Committee announced 1993 CAFS Award recipients. This year's outstanding student award went to Ms. Wen-Hsin Wu from University of Georgia. Dr. Steve Chen and Dr. Yao-Wen Huang received Professional Achievement Awards. Dr. Chen is a Country Director of American Soybean Association in Taiwan, ROC. He was recognized for his contribution in the field of nutrition research and soybean utilization technologies. As a life member of CAFS, Dr. Chen has been very supportive to the CAFS's activities. Dr. Huang, an Assistant Professor from University of Georgia, Athens, Georgia, has made significant accomplishments in the field of seafood technology. His dedication to the CAFS's special forum was well known. Dr. Santa Lin, Director of

Protein Research from Protein Technologies International, Inc. received the Distinguished Service Award for his tireless services to CAFS, especially for his initiative and dedication in instituting the new English version of CAFS by-laws.

There were many door prizes, including cashes, camera, walkman, etc., donated by supporting corporations. The grand prize of \$250 went to Cathy Ang (congratulation, Cathy!).

In addition to the regular IFT programs, CAFS sponsored a student employment forum on Monday and an IFT special forum on Wednesday afternoon with a theme on Health Benefits of Selected Chinese Foods. We thank Dr. Romeo Leu for arranging the student employment forum and Dr. Yao-Wen Huang for arranging the IFT special forum.

The CAFS executive committee met on Monday afternoon to review CAFS financial status and future planning. It was decided that regular and student membership dues for 1994 would be increased to \$20 and \$10 per year, respectively, and lifetime membership to \$300, and to reinstate corporate membership to cover increasing operating expenses. The Executive Committee also decided to continue sponsoring a Student Employment Forum and to propose a symposium to the IFT through its International Division.

**Excerpts from the Speech of Dr. K.C. Chang (Past President, CAFS)
During the 1993 Annual CAFS Banquet in Chicago, Illinois**

"... The achievement of a society is the achievements of its members, the level of our (CAFS) achievement as an organization in this past year has been remarkable. ..." This was the theme of Dr. Chang's speech for the night where he went on to recognize the achievements of the society as well as its outstanding members.

From the academia, **Dr. Joseph Jen** was congratulated on his recent posting to the position of the Dean of the Agriculture College for the St. Louis Obispo campus (California Polytechnical University). **Dr. Stephen Chang** was recognized for his scientific contribution to the lipid chemistry area and for having two National Awards established in his honor (by IFT and AOCS). The works of **Dr. Daniel Fung** in Rapid Detection Methods

for Microorganisms was also mentioned.

Special recognition was also given to **Dr. Steve Chen**, one of the recipients of this year's CAFS Annual Professional Award (see related article).

Among many other members recognized by Dr. Chang during his speech included: **Dr. Ada Chen**, **Mr. Ronnie Yuan**, and **Dr. Wai-Kit Nip** - for contributions to the CAFS Quarterly Newsletters and Membership Directory; **Dr. Cathy Ang** - for chairing the Award Committee; **Dr. Yao-Wen Huang** and **Dr. Grace S. Lo** - for organizing the CAFS/IFT special forum on health benefits of selected Chinese foods; **Dr. Romeo Liu** - for organizing the student employment forum; and; **Dr. T.C. Chen** -for serving as Treasurer.



FEATURING THE 1993 ANNUAL CAFS AWARD WINNERS

Distinguished Service Award

Dr. Santa H.C. Lin, Director, Protein Research, Protein Technologies International.

For his long term and tireless service to CAFS, especially for his contributions and dedication in completing the new, English version of the CAFS By-Laws.

Professional Achievement Award

Dr. Steve Chen, Country Director, American Soybean Association, Taiwan. For his outstanding contributions in the field of nutrition research and soybean utilization technologies. As a life member of CAFS, Dr. Chen has been very supportive of this Society's activities and

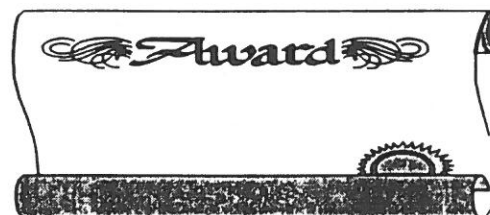
has made valuable suggestions for successful CAFS operations.

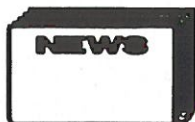
Dr. Yao-Wen Huang, Assistant Professor, University of Georgia.

For his significant accomplishments in the field of seafood technology and for his dedication and outstanding contributions to CAFS's special forum programs.

Outstanding Student Award

Ms. Wen-Hsin (Cindy) Wu, University of Georgia, Athens, GA.
Ph.D. candidate, GPA: 3.90.





NEWS/UPDATES FROM CAFS MEMBERS.....

Dr. Cathy Ang has relocated. Her new address and telephone numbers are:

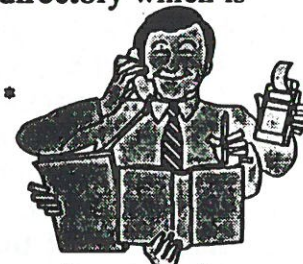
**Cathy Ang
FDA/NCTR/DHH, HFT-230, Chemistry Division
Jefferson, AR 72079
Tel. No. 501-543-7400 (Office)
FAX No. 501-543-7576**

Dr. Daniel Fung was recently the recipient of the Distinguished Service to Agriculture Award. This is the highest award given by the International Gamma Sigma Delta - the Honor Society of Agriculture.

Dr. James H. Moy was honored as a Fellow of the Institute of Food Technologists at the Opening Session of IFT's Annual Meeting held on July 10, 1993, in Chicago, Illinois. This award recognizes Dr. Moy as outstanding IFT Professional Member with extraordinary accomplishments in the field of food science and technology. His contributions to radiation preservation and solar dehydration of foods plus his assistance to many Asian and Latin American countries were cited by the IFT. Dr. Moy is currently serving as the Chairman of the graduate faculty in food science at the University of Hawaii.

CAFS has recently submitted a symposium proposal to the Institute of Food Technologists for its 1994 Annual Meeting in Atlanta, Georgia. The proposed title of this symposium is: "Technical Development Challenges of Ethnic Foods for the Global Market". Drs. Alice Cha and Bonnie Sun, with the assistance of Dr. Daniel Fung, will be responsible for organizing this symposium.

CAFS is currently in the process of updating the profiles of all members. If you recently have moved, changed you job, conducting research in a new area, etc., please let us know. We will update and/or include this information in the new membership directory which is being prepared.



If you have any news and/or updates to share with fellow CAFS members, please send or FAX a note to the Editor-in-Chief.

Highlights of CAFS-IFT Special Forum
The Health Benefits of Selected Chinese Foods
Contributed by Yao-wen Huang



This year, the Chinese American Food Society sponsored a Special Forum entitled "The Health Benefits of Selected Chinese Foods" in conjunction with the Annual Meeting of Institute of Food Technologists in Chicago, IL, on July 14. The session was organized and chaired by Drs. Grace Lo and Yao-wen Huang. The topics and panelists included Soybean and Health by Dr. Steve S. Chen; Therapeutic Effects and Processed Foods of Chinese Pearl Barley by Dr. Wenchang Chiang; Cardiovascular and Cancer Preventive Effects of Herbs, Including Garlic; by Dr. Robert I-San Lin; Cancer Preventive Effects of Green Tea by Dr. Chi-Tung Ho; "As-Food-As-Medicine": An Overview by Drs. Yao-wen Huang and Chung-Yi Huang; and Legal and Scientific Consideration of Chinese Foods in Medical Application by Dr. J. Alex Wei.

In Dr. Yao-wen Huang's opening remarks, he noted that some traditional Chinese foodstuff have been used for human health and therapeutical purposes in the Orient for centuries. The facts and myths pertaining to some food items have been a topic of interest among the scientific community for many years. More recently, scientific and systematic research on these food items has gained popularity in academic and research institutions in China as well as around the world. The Chinese Health Authority has published lists of food items which have been traditionally recognized to have health benefits and therapeutic effects. These food items were officially categorized under a special term, literally translated to be "As-Food-As-Medicine".

The first presentation was made by Dr. Steve S. Chen, Director of the American

Soybean Association in Taipei, Taiwan, R.O.C. He stated that in the last few decades, soybean has finally achieved the prominence in human nutrition that it rightfully deserves. A crop native to China, soybean has been cultivated there for some five thousand years. As societies become more affluent, they are also more health-conscious. This new awareness has prompted the dramatic increase in soybean production in the last few decades.

Soybean, besides being a good source of both protein and oil, also have some nutritional benefits. Recent research have demonstrated that in hyperlipidemic subjects, soy protein reduced serum cholesterol and triglycerides better than animal protein. Other studies have also shown that soybean oil is rich in vitamin E (tocopherol) which is a natural antioxidant, and lecithin which decreases the risk of blood colts. In addition, soybean oil is an extremely good source of the essential fatty acid, linoleic acid, which has been shown to lower total plasma cholesterol (but not HDL cholesterol).

Dr. Chen also pointed out that soy cotyledon fiber has been demonstrated to lower plasma cholesterol in hypercholesterolemic subjects; improve glucose tolerance and insulin response in diabetic patients; and increase fecal weight decrease fecal transit time.

Dr. Wenchang Chiang, a professor at the Graduate Institute of Food Science and Technology, National Taiwan University in Taipei, Taiwan spoke on the therapeutic effects and processed foods from the Chinese pearl barley. Dr. Chiang stated that the Chinese pearl barley (*Coix*

lachryma-jobi L. var. *ma-yuen* Stapf), also called adlay or soft-shelled job's tears, or hatomugi in Japanese, is a one-year crop which belongs to the *Gramineae*. *Coix*, native to China, India and Burma, and is grown extensively in Asia. According to the Book of Hon-zo-kou-moku written by Si-Cheng Li (1596), Chinese pearl barley has stomachic, diuretic, antiphlogistic, anodynic, antispasmodic and antitumor effects. Therefore, it has been long used in China for the treatment of wart and chapped skin, rheumatism and neuralgia, and as anti-inflammatory and anthelmintic agents.

Modern medical reports on pharmacological activities have certified the physiologically active constituents isolated from the seeds and/or roots of the Chinese pearl barley. For example, coixenolide ($C_{38}H_{70}O_4$) has antitumor activity in Ehrlich ascites sarcoma in mice. Coixol ($C_8H_7O_3N$) not only has anodynic and antispasmodic activities, but it also possess pharmacological properties similar to chlorzoxazone, and acts as a central muscle relaxant with an anti-convulsant effect. Three kinds of glycan (coixans) show remarkable hypoglycemic effect in normal and hyperglycemic mice treated with alloxan. The aglycone of benzoxazinoids inhibit histamine release from rat mast cells induced by concanavalin A and by immunoglobulin E. Ovulatory-active substances have the effect of induction of ovulation and stimulation of ovarian follicular growth in female golden hamsters.

Finally, Dr. Chiang noted that in order to use the Chinese pearl barley as a functional medical food for health, it is necessary to foster the spirit of interdisciplinary integration. Researchers of medicine, pharmacology, agriculture, nutrition and food science must interact and collaborate to systematically study the agronomic characteristics, food processing

requirements and clinical effects of this grain.

Dr. Robert I-San Lin, Vice President of the Nutrition International Co. in Irvine, California, discussed the cardiovascular and cancer preventive effects of herbs, including garlic. He indicated that many herbs contain physiologically and/or pharmacologically active compounds that have anti-atherosclerotic, anti-thrombotic and anti-neoplastic effects. Dr. Lin also pointed out that garlic, which is richly endowed with thioallyl compounds, may provide protection against some of the most prevalent health threats, including occlusive cardiovascular and circulatory diseases, and cancer.

Several epidemiological studies demonstrate the correlation between high garlic consumption and reduced cancer risk. However, the benefit of treating existing cancer with garlic is not as quantifiable at the present time. For centuries in the past, when benign and malignant tumors cannot be clearly differentiated, the Chinese has used garlic to treat neoplastic conditions. During the more recent decades, garlic has been used to treat late stages of various carcinomas, including gastric cancer. However, the efficacy of garlic treatments at these late stages of cancer is doubtful. Nonetheless, animal models have shown that such treatments can extend the life-span of the inflicted ones.

Dr. Lin also concluded that garlic/aged garlic extract has been shown to lower serum lipid levels, to increase fibrinolytic activity, to inhibit platelet aggregation and adhesion, to dilate blood vessels, and to attenuate vasospasm. These abilities contribute to garlic's cardiovascular protective efficacy.

Dr. Chi-Tung Ho, professor at the Department of Food Science of Rutgers-

The State University of New Jersey at New Brunswick, New Jersey spoke on the cancer preventive effects of green tea. He stated that tea is the most widely consumed beverage world-wide. While green tea is a main beverage of Asian countries such as China and Japan, black tea is more popular in North America and Europe. Most commercially prepared tea is obtained from the leaf of the plant *Camellia sinensis*, and an estimated 2.5 million tons of dried tea were manufactured in 1990. The term "green tea" refers to the product manufactured from fresh leaves while preventing significant oxidation of the major leaf polyphenols known as catechin. The principal catechin present in green tea are (-)-epicatechin (EC), (-)-epigallocatechin (EGC), (-)-epicatechin gallate (ECG) and (-)-epigallocatechin gallate (EGCG). During the production of black tea, there is extensive enzymatic oxidation of the leaf phenols to dark products such as theaflavins and thearubigens.

Dr. Ho cited earlier studies which suggested that compounds that possess antioxidant activity can inhibit 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced tumor promotion in mouse skin and/or inhibit biochemical effects of TPA that are associated with tumor promotion. Recent investigations have shown that green tea and its polyphenol constituents possess antioxidant activity and that a green tea polyphenol fraction has an inhibitory effect on benzo[a]pyrene- and 7,12-dimethylbenzo[a]anthracene induced tumor initiation as well as TPA-induced tumor promotion in mouse skin. Studies with individual polyphenolic compounds in green tea indicated that topical application of ECG, EGC and EGCG inhibited TPA-induced inflammation in mouse epidermis. It was further observed that oral administration of green tea or intraperitoneal administration of EGCG inhibited the

growth and/or caused the regression of established experimentally-induced skin papillomas.

Dr. Yao-wen Huang, Assistant Professor at the Department of Food Science and Technology, University of Georgia in Athens, Georgia and Dr. Chung-Yi Huang, Associate Professor at the Department of Food Processing, National I-Lan Institute of Agriculture and Technology in I-Lan, Taiwan, presented on the topic entitled "AS FOOD AS MEDICINE: an overview". The three listings of "AS FOOD AS MEDICINE" included more than 60 items since its issuance in 1988. These are primarily comprised of foodstuff from plant origin. The only items of animal origin include snakes, oyster, chicken gizzard and honey. Fruit, root, flower, leaf, stem or skin of a plant are used in form of dried products. Some examples of these items are: from fruit origin - Chinese date, hawthorn, papaya, longan, wild pepper, bergamot, lotus nut, mulberry, orange, black plum, medlar and citron; from root origin - ginger, dioscoreae, galangal, couch grass root, and phragmites communis; from flower origin - bulbous lily, feverfew, bishop-wort and safflower; from leaf origin - clove, mulberry leaf, waterlily leaf, lettuce and mint; from seed origin - ginkgo seed, mustard seed and star anise seed; and from other sources - malt, black sesame, Chinese pearl barley, red bean, cardamom, angelica, liquorice, cassia and nutmeg.

Dr. Huang added that most of these items have been used as regular ingredients in Chinese home cooking. During certain occasions, some of these Chinese herbs/medicine are popular for preparing healthy family meals.

Finally, Dr. Alex Wei, Director of R&D for Elan Pharma in Cambridge, Massachusetts discussed the legal and

scientific considerations for Chinese foods in medical applications. He mentioned that enteral nutrition market in the U.S. has a lot of potential. Over the past twenty years, technology and scientific advancements have helped to position enteral nutrition beyond its original purpose as a meal supplement or meal replacement for patients. Currently, the use of enteral nutrition or general nutritional supplement is not limited to sustaining, nourishing and nutritionally supporting ill patients. This concept is also being practiced for its possible ability to improve a patient's or an average person's immune system and for disease curing and/or prevention purposes.

Nutraceuticals or pharmafoods may be described as any food substances capable of sustaining, supporting and enhancing the overall health state and immune system of the human body. By using nutraceuticals, one is able to maintain his healthiness and enhance/prolong this well-being throughout his entire life span. While the promotion and development of nutraceuticals for medical and health benefits are very encouraging and exciting, one cannot ignore the regulatory issues associated with this. Adequate and well planned scientific studies must be

conducted to provide a basis which will support these medical and/or health claims.

Dr. Wei indicated that certain Chinese foods, herbal and medicinal drinks have long been considered and promoted as being beneficial to health or for certain medical treatments. While most of these have been "proven" by empirical practice or experience, only a few have been documented or researched via contemporary scientific measures. Therefore, in addressing the application of Chinese foods or medicinal drinks for the current market, one has to consider the need for proper scientific studies and the related regulatory compliance issues. This is the most appropriate way to endorse the use Chinese or traditional medicinal foods and drinks for the current nutraceutical market.

Dr. Grace Lo concluded that more research on the health benefits of Chinese foods is needed in the future. She hopes that food scientists, especially those of Chinese origin, will pay more attention to this topic. The proceedings of this forum will be published by the Chinese American Food Society in November this year.



NEW PUBLICATION FROM CAFS

- TITLE:** Traditional Chinese Food with Advanced Technology
(proceedings from the 1990 and 1991 IFT Special Forums)
- PUBLISHER:** Chinese American Food Society
- CONTENTS:** Nine chapters with 65 pages
- Chapter 1. Traditional Chinese food in China: past, present and future
by Anthony H. Chen, Zi-duan Du, and Hoong Lu
- Chapter 2. Food industry in Taiwan
by Tin-yin Liu
- Chapter 3. Characteristics of Chinese food: unique texture
by Joseph J. Jen
- Chapter 4. Soybean - from traditional usages to modern application
by Santa H.C. Lin
- Chapter 5. Microbiology of soybean-based Oriental foods
by Daniel Y.C. Fung
- Chapter 6. Nutritional implications of Chinese food in American diet
by Catherina Y.W. Ang and Yao-wen Huang
- Chapter 7. What roles R & D have in manufacturing Oriental foods for
foodservice industry
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New Developments in Enzymes for Juice Processing

Yong D. Hang, Dept. of Food Science & Technology
Cornell University, Geneva, New York 14456

In recent years, a variety of enzymes have been used in the food and related industries (Table 1). In juice processing, for example, enzymes are used to increase yields from the extraction process (1), to improve filtration and clarification (2), and, to enrich the aroma of the final product (3). The enzymes widely used for juice processing are pectinases from food-grade organisms such as *Aspergillus niger* or *Rhizopus oryzae*. Commercial pectinolytic enzyme preparations normally contain pectinases and other enzymes that hydrolyze pectic substances in fruits and vegetables. Pectin is a natural polysaccharide that can trap juice in the presscake, and cloud the juice after filtration. Table 2 shows a list of major manufacturers of commercial enzyme preparations for juice processing.

Juice Extraction

To increase juice yields, the fruit mash is usually treated with pectinolytic enzymes at 15-30°C (59-86°F) for 30-60 minutes. The quantity of pectinolytic enzymes added will vary with the enzyme activity, pH, the type of fruit, contact time and treatment temperature. The dosage of a commercial enzyme preparation, NOVO's Pectinex Ultra SP-L for example, is 100-

200 g/ton of apples under the processing conditions described above. Enzyme treatment can increase the yield of apple juice by as much as 10% from mature apples and apples that have been stored at low temperatures.

Table 2. Major commercial suppliers of pectinolytic enzyme

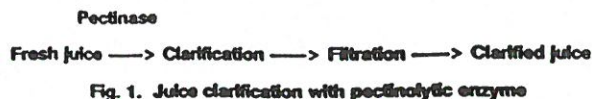
Product Name	Supplier
Pectinex	NOVO Laboratories, Inc.
Klerzyme	Gist-brocades Food Ingredients, Inc.
Pectinol	Genecor International, Inc.
Rhapect	Rohm Tech, Inc.
Clarex	Solvay Enzymes, Inc.

Juice Clarification

Freshly pressed apple juice is generally cloudy and viscous due to the presence of pectic substances. Pectinolytic enzymes are needed to reduce the viscosity and produce a clear apple juice (Fig. 1). The enzyme concentration, contact time, pectin content, pH of the juice and treatment temperature affect enzymatic clarification of the product. The juice is usually treated with pectinolytic enzymes at 54°C (129°F) for 1-2 hours or at 16°C (61°F) for 6-8 hours. For example, the dosage of commercial enzyme preparation NOVO's Pectinex 3X L, is 100-200 g/1000 gallons of apple juice.

Table 1. Uses of enzymes in food processing

Enzyme	Food	Purpose
Amylase	Corn syrup	Saccharification of starch
B-Glucosidase	Juice & wine	Flavor enhancement
Lipase	Cheese	Flavor enhancement
Naringinase	Citrus juice	Debittering
Nuclease	Food ingredient	Flavor enhancement
Pectinase	Fruit juice	Improve extraction and clarification
Protease	Meat Beer	Tenderization Clarification, chill-proofing



Flavor Enrichment

Free flavor-active volatiles are lost during clarification and concentration of fruit juices. One of the methods for improving the flavor quality of juice is to fortify the

final product with natural or synthetic essences. The other method is to use the enzyme, *B*-glucosidase, for flavor enrichment of fruit juices. Plant and microbial *B*-glucosidases have been reported to increase the concentration of free aroma-active volatiles by hydrolysis of bound aromatic compounds such as monoterpene glucosides (Fig. 2).

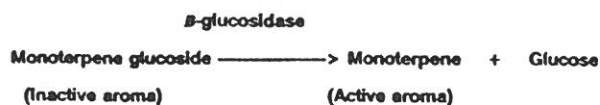


Fig. 2. Enzymatic release of monoterpene from monoterpene glucoside

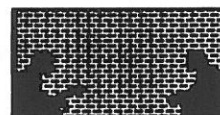
The endogenous *B*-glucosidases present in vegetables and fruits can only hydrolyze *B*-*D*-glucosides of primary alcohols such as geraniol, nerol and citronellol. The enzyme from *Aspergillus niger*, *Dekkera intermedia* and *Candida molischiana* have been used experimentally to improve the flavor quality of fruit juices and wines. Microbial *B*-glucosidases are capable of efficiently hydrolyzing *B*-*D*-glucosides of tertiary alcohols such as linalool and -

terpeneol. *B*-glucosidases for juice processing and wine-making should possess not only a large aglycon specificity and a good activity at low pH (3.0-3.5), but also have good stability and tolerance to 0.5M glucose and 10-15% ethanol.

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NOTE: use of product and/or supplier names should not be construed as an endorsement by the author or Cornell University.



ABOUT THE AUTHOR

Dr. Hang is currently serving as a full professor at the Department of Food Science and Technology of Cornell University in Geneva, New York. Since 1968, he has been teaching courses in food microbiology, fermentations, and food processing waste management. His research interests include enzymology, biotechnology, food microbiology, food safety, and food waste management. Dr. Hang holds three U.S. Patents and has published extensively.

Dr. Hang received his B.S. degree in Agricultural Chemistry from the National Taiwan University. He later earned his M.S. and Ph.D. degrees in microbiology from the University of Alberta and McGill University, respectively.

Besides his memberships in the Institute of Food Technologists, the American Society for Microbiology, and the Chinese American Food Society, Dr. Hang is also active in Cornell's International Food Science Program. In 1992, Dr. Hang was the recipient of the Professional Achievement Award given by the Chinese American Food Society.

THE CHINESE RESTAURANT INDUSTRY CRISIS IN THE U.S.A.

By Charles Tang, Deputy Chairman of the International Culinary Exchange Council

It is the general saying that our ancestors brought to this country three choppers: the cleaver in the restaurant, the scissors in the laundry, and the shaver in the barber shop. It seems that the only cleaver still in business today is facing a severe crisis.

The first Chinese restaurant opened for business in the U.S. during the gold rush days of 1850 in the West Coast. During those days, Chinese restaurants (referred to as "Chop Sue restaurants") distinguished themselves from other cuisines by hanging small yellow triangular flags in front of their doors. Since then, Chinese restaurants have flourished across this nation. The Overseas Chinese Year Book of 1946 estimated that there were a total of 1,101 restaurants in this country, congregating mostly in the larger cities. This number grew dramatically in the 1980's. According to a 1991 U.S. Census, there were 25,265 Oriental restaurants in the U.S., of which about 85% are Chinese.

A three year study of ethnic and regional restaurants conducted by Geography Professor Wilbur Zelinsky (Penn State University) identified more than 26,500 "specialty eating places" in 271 metropolitan cities. His study concluded that Chinese, Italian, and Mexican restaurants together accounted for 70% of all eating establishments. Unfortunately, although Chinese restaurants are the largest in numbers, yet Chinese cuisine has not been known for its quality. The 1990 issue of the Mobil Travel Guide, one of America's most respected guidebook, confirmed Zelinsky's conclusion. Of the 180 Chinese restaurants rated nationwide, none received the coveted 4 or 5 star rating.

As a result of the decline in this nation's economy, the total number of restaurants

have dropped from 387,280 in 1988 to 381,288 in 1991. Contrary to this trend, the number of Chinese restaurants was estimated to have increased from 16,000 in 1988 to 21,500 in 1991. This increase is not the result of additional demand. Instead, most Chinese restaurant owners do not rely on market research, and therefore, there is a tremendous turnover of Chinese restaurants in this country (although the number of new restaurants opened greatly overshadow those that have gone out of business).

Marketing has never really played a role in the Chinese restaurant industry. Most Chinese restaurants are "Mom and Pop" type operations. Owners lack education and do not understand the investment in marketing. In addition, the majority is also more concerned with keeping prices down (due to frequent price wars among neighborhood restaurants) rather than maintaining a high standard of quality. It is therefore anticipated that this crisis will progressively worsen as more overseas Chinese (from China, Taiwan, Hong Kong, etc.) immigrate and make the restaurant business their livelihoods. To further extrapolate the social implications of this crisis, a significant portion of unemployed restaurant workers may eventually turn to crime.

In October 1990, the first International Chinese Dietetic Symposium was held in Beijing, China. Discussions were divided into two groups: Chinese Food Industry led by Dr. Anthony Chen, and, Chinese Restaurant Industry led by Charles Tang. Participants of the first group were mostly scholars and professionals who were highly educated as opposed to those participating in the second group. Since the Food and Restaurant industries are closely related, the Chinese Restaurant Industry will

require the assistance of educated individuals to act as leaders in setting a nationwide plan. Members of the Chinese American Food Society are urged to assist in this foreseeable and imminent problem within our community. According to a 1991 census, the total Chinese population

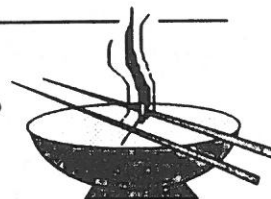
in the U.S., including students, was about 1.65 million. Approximately 20% of this population is involved in the restaurant business. Therefore, saving the Chinese Restaurant Industry is undoubtedly a vital task for the Chinese community.

ABOUT THE AUTHOR

Mr. Charles Tang has been very active in promoting Chinese cuisine in the U.S. Besides serving as the Deputy Chairman for the International Culinary Exchange Council, Mr. Tang is also the Executive Director of Austin Koo's Mandarin Restaurant in Chicago, Illinois. Currently, Mr. Tang is in the process of organizing an international symposium on Chinese cuisine, sponsored by the Institute for the Advancement of the Science and Art of Chinese Cuisine (where Mr. Tang is their Public Relations Director). This symposium scheduled for September 22-24, 1994 will feature Ken Hom (renowned chef and author of "Fragrant Harbor Taste") as their guest speaker. Anyone interested in this symposium or with Mr. Tang's article can contact him at Tel. No. 312-236-1666.

CHINESE FOOD - BAD FOR YOUR HEALTH?

Contributed By Jit Ang



A recent report released by the Center for Science in the Public Interest (CSPI) targeted the nutritional value of Chinese food purchased from a number of Chinese restaurants around the country. In their study, CSPI selected 15 popular dishes and these were purchased (as dinner take-outs) from 20 restaurants scattered around Washington, San Francisco, and Chicago. To minimize analytical costs, CSPI pooled together the same dishes from different restaurants, e.g., egg rolls from the 20 different restaurants were mixed together and analyzed as one sample, etc. Analytical testing was subsequently conducted by an independent laboratory.

After reviewing the results of their study, CSPI concluded Chinese food when consumed in an American manner may not constitute a healthy diet. Fat and

percent calories from fat were found to be excessively high. In addition, the levels of cholesterol and sodium in these dishes far exceeded FDA's recommended daily maximums. To help clarify their conclusions and recommendations, CSPI admitted that the Chinese way of eating is very different from their American counterparts. Instead of consuming lots of rice (as the staple), most Americans do the opposite. As a result, an average Chinese restaurant meal, when eaten by an American would be enormously high in fat, cholesterol, and sodium. To rectify this unhealthy situation, CSPI recommends the following:

1. For every cup of entree consumed, one cup of rice should also be eaten. This will dilute the fat, sodium, and cholesterol contents of the entree.

2. Order more steamed vegetables. This extra portion of greens can be mixed in with the entree or flavored with the sauce from the entree.
3. Use a fork or a pair of chopsticks to lift the food out of the sauce. Since the sauce typically contains excess fat and sodium, leaving this behind is a healthy practice.

Following the release of the CSPI study, many Chinese restaurants have reported a significant drop in their businesses. Estimates have assessed this drop to be between 25 to 35%. This drop-off was particularly severe among customers not of the Chinese descent, especially in the suburbs. In a rebuttal issued by the Organization of Chinese Americans, Inc.

(OCA) on behalf of the Chinese community, the CSPI report was criticized as being negative towards the nutritional value of Chinese food. It was pointed out that the cooking methodology for the dishes chosen by the CSPI were not representative of most Chinese food. Instead of deep fat frying, the majority of Chinese food is stir-fried. The sauce which contains high levels of fat and sodium, is also not typically consumed (left on the plate). More importantly, OCA echoed CSPI's conclusion that Chinese food is not consumed in the Chinese manner (entrees are eaten family style with abundant portions of rice) by most Americans. Therefore, it would be unfair to consider each entree as a complete meal by itself.

NUTRITIONAL VALUES OF SELECTED CHINESE FOOD

(Adapted from the Center for Science in the Public Interest)

Dish (Serving Size)	Calories	Fat (g)	% Calories From Fat	Cholesterol (mg)	Sodium (mg)
Sichuan Shrimp (4 cups)	927	19	18	336	2457
Stir-Fried Vegetables (4 cups)	746	19	22	0	2153
Shrimp in Garlic Sauce (3 cups)	945	27	25	307	2951
Hunan Tofu (4 cups)	907	28	27	0	2316
Chicken Chow Mein (5 cups)	1005	32	28	205	2446
House Fried Rice (4 cups)	1484	50	30	346	2582
House Lo Mein (5 cups)	1059	36	31	175	3460
Hot and Sour Soup (1 cup)	112	4	32	129	1088
Orange Crispy Beef (4 cups)	1766	65	33	296	3135
General Tso's Chicken (5 cups)	1597	59	33	342	3148
Beef with Broccoli (4 cups)	1175	46	35	228	3145
Sweet and Sour Pork (4 cups)	1613	71	39	118	818
Kung Pao Chicken (5 cups)	1620	76	42	277	2608
Moo Shu Pork (4 cups)	1228	64	47	465	2593
Egg Roll (1 roll)	190	11	52	7	463

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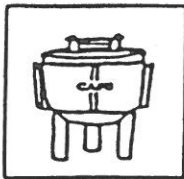
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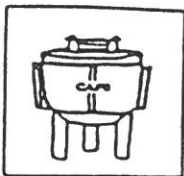
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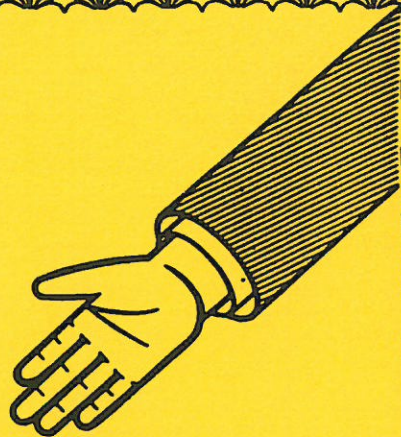
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