

**MINUTES OF THE NUTRITION COORDINATING COMMITTEE (NCC)
MEETING, NATIONAL INSTITUTES OF HEALTH (NIH)
Rockledge 2, Conference Room 9100-9104, Bethesda MD
March 10, 2006 2:00-3:30 PM**

WELCOME

Dr. Van Hubbard, Director, Division of Nutrition Research Coordination (DNRC) convened the meeting at 2:04 PM and welcomed participants. Participating via phone were Ms. Tammy Brown, IHS; Dr. Paul Coates, NIH ODS; Dr. Johanna Dwyer, NIH ODP; Dr. M.K. Holohan, NIH NHGRI; Dr. Dave Klurfeld, USDA; Dr. Molly Kretsch, USDA; Dr. Natalie Kurinij, NIH NEI; Ms. Michele Lawler, HRSA; Dr. Iris Mabry, AHRQ; Dr. Elizabeth Maull, NIH NIEHS; Dr. Jean Pennington, NIH DNRC; and Dr. Barry Portnoy, NIH ODP. The agenda for the meeting is provided as Appendix A, and the list of attendees is provided as Appendix B.

APPROVAL OF MINUTES FROM THE FEBRUARY 2, 2006 NCC MEETING

Minutes from the February 2, 2006 NCC Meeting had previously been sent to NCC members via email. Dr. Hubbard asked if there were any other corrections to the minutes. There were none. Dr. Paul Coates, Office of Dietary Supplements (ODS), made a motion to approve the minutes, and Dr. Sharon Ross, National Cancer Institute (NCI), seconded the motion. The minutes were thus approved and will be posted on the DNRC website, <http://www.dnrc.nih.gov>, along with the minutes from previous NCC Meetings.

PHYSICAL ACTIVITY MEASURED BY ACCELEROMETRY IN NHANES 2003-2004

Dr. Rick Troiano, National Cancer Institute (NCI), presented data on physical activity measured by accelerometers in NHANES 2003-2004. Objective activity data were collected on persons ages 6 y and older in the survey. Participant compliance in the component was very high, with data being available from 90% of the targeted sample. Dr. Troiano described the process and results of preliminary analytic decisions that were then applied to the complete data set. Results were presented showing the effects of gender, age, race-ethnicity and weight status on various indicators of physical activity. From these data, it appears that adherence to current physical activity recommendations among adults is less than 5%, in contrast to estimates of 25-30% adherence based on self-report data.

UPDATE FROM THE DHHS OFFICE OF DISEASE PREVENTION AND HEALTH PROMOTION (ODPHP)

Ms. Kathryn McMurry stated that ODPHP had no updates to share at this time.

NIH OFFICE OF DIETARY SUPPLEMENTS (ODS)

Ms. Karen Regan provided the NCC with several updates from ODS.

The first update was a reminder about upcoming seminars:

- Thursday, March 16, 3:00 PM, EPN H

Ross Prentice, Ph.D., Fred Hutchinson Cancer Center and University of Washington, Seattle, WA

“Research Issues and Strategies in the Study of Diet and Chronic Disease”

- Wednesday, March 29, 10:30 AM, EPN H
Christine Taylor, Ph.D., Food and Drug Administration/World Health Organization
“Overview of Joint FAO/WHO Workshop on a Model for Establishing Upper Levels of Intake for Nutrient Substances”

Ms. Regan informed the NCC that Paul Coates, Director, ODS, was asked to testify at the House Government Reform Committee Hearing, March 8: **“The Regulation of Dietary Supplements: A Review of Consumer Safeguards”** regarding the ODS role in research, in collaborations with FDA, and in public education efforts. His written testimony is appended to the minutes. See Appendix C.

Other witnesses included: Robert Brackett, CFSAN/FDA; Lee Peeler, Bureau of Consumer Protection/FTC; Kathleen Jordan, NSF International; Srinu Srinivasan, US Pharmacopeia; Tod Cooperman, Consumerlab.com; and Janell Mayo Duncan, Consumers Union.

UPDATE OF DNRC ACTIVITIES

Nutrition Education Subcommittee (NES).

Dr. Jean Pennington, DNRC, has provided an update of the activities of the NIH NCC NES. For the calendar year 2006, the NES has reviewed nine documents, which include two from NIH, three from DHHS, and four from USDA. Materials reviewed since the last NCC meeting are:

- *Spotlights* (USDA National Agriculture Library)
- *Latino Manual* (NHLBI)
- *BodyWorks Toolkit* (DHHS Office of Women’s Health)
- *3 Fruit and Vegetable Brochures* (CDC)
- *Just Enough for You: About Food Portions* (NIDDK WIN)
- *Nutrition Essentials: Teaching tools for Healthy Choices* (USDA Food and Nutrition Service)

A listing of reviewed and published NIH nutrition education materials is provided on the DNRC website. Needed updates from NCC members should be communicated to the DNRC.

Human Nutrition Research and Information Management (HNRIM) System Update.

Mr. Jim Krebs-Smith, DNRC, provided a status report of the HNRIM System. The HNRIM update has been going well and is nearing completion. The final code review for dietary supplements is being conducted by the ODS. During the update process, concerns have been raised regarding differences between IC's

earlier nutrition submissions to OFM and HNRIM. Mr. Krebs-Smith reminded NCC members that OFM considers initial IC submissions to be "estimated" actuals, which may undergo revision during the HNRIM update. He cited the Budget Office memo which contains this directive, and asked anyone with further questions to contact him or Ms. Karen Regan.

The Need for Novel Engineering Approaches to Address Obesity

Dr. Van Hubbard announced a presentation by Dr. James Hill that will be given on March 20, 2006 at the National Science Foundation. The announcement is appended to the minutes. See Appendix D.

REPORTS FROM NCC MEMBERS AND LIAISONS

Dr. Sharon Ross, NCI, announced that as part of the Stars in Nutrition and Cancer Seminar Series, Dr. Bruce Ames, Professor, Dept. of Molecular and Cell Biology at the University of California Berkeley, will be giving a presentation on March 27, 2006. The presentation is titled, "Mitochondrial Decay Contributes to Aging and Degenerative Diseases: The Role of Micronutrients." The event will be held in the Lipsett Amphitheater, Building 10 at 3:30. A reception will follow.

Dr. Ross also announced that a new program director, Dr. Nancy Emenaker, has joined the Nutritional Science Research Group (NSRG). In her new role, Dr. Emenaker will assist the NSRG with fostering preclinical and clinical research to define the role of bioactive food components as modifiers of cancer risk and tumor behavior.

Dr. Cindy Davis, NCI, announced a discussion session on needs/opportunities for bioactive foods components research that will take place at the upcoming Experimental Biology (EB) meeting in San Francisco. This session will occur on Saturday, April 1 from 6:00-7:00 pm in the Commonwealth Room of the Argent Hotel.

NEXT NCC MEETING

There will not be a meeting in April. The next NCC meeting is scheduled for May 4, 2006.

ADJOURNMENT

The meeting was adjourned at 3:25 PM.

LIST OF APPENDICES

Appendix A - NIH NCC Meeting Agenda for March 10, 2006

Appendix B - NCC Meeting Attendees for March 10, 2006

Appendix C – Written testimony by Dr. Paul Coates, "The Regulation of Dietary Supplements: A Review of Consumer Safeguards"

Appendix D – The Need for Novel Engineering Approaches to Address Obesity

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APPENDIX A. NIH NCC MEETING AGENDA FOR MARCH 10, 2006
2:00-3:30 PM, Rockledge 2, Conference Room 9100-9104, Bethesda MD

Happy Nutrition Month!

1. **Welcome**.....Van Hubbard
2. **Approval of Minutes of February 2, 2006 Meeting**.....Van Hubbard
3. **Using Accelorometry: Methods Employed in NHANES**.....Rick Troiano, NCI
4. **ODPHP Update**.....Kathryn McMurry,
ODPHP/OS/HHS
5. **ODS Update**Paul Coates, ODS
6. **Current DNRC Update of Activities**.....DNRC Staff
 - HNRIM Update.....Jim Krebs-Smith
 - Nutrition Education Subcommittee Update.....Jean Pennington*
 - International Committee Information.....Pam Starke-Reed/Dan Raiten *
7. **Reports from NCC Members and Liaisons**.....NCC Members
8. **Next Meeting:** May 4, 2006
9. **Old Business**

*** Updates will be included in the minutes of the meeting only**

APPENDIX B. NCC MEETING ATTENDEES FOR MARCH 10, 2006

	Members Present	Members Absent	Alternates Present
Chairperson:	V Hubbard		P Starke-Reed

NIH Members:

NCI		J Milner	S Ross
NHLBI		D Danford	
NIDCR		R Nowjack-Rayner	
NIDDK	C Miles		
NINDS		M Mitler	
NIAID		M Plaut	
NIGMS		S Somers	
NICHHD	G Grave		
NEI	N Kurinij		
NIEHS	E Maull		
NIA		J Finkelstein	
NIAMS		J McGowan	
NIDCD		B Wong	
NIMH		P Muehrer	
NIDA		G Lin	
NIAAA		R Breslow	R Brown
NINR		Y Bryan	
NCCAM		M Klein	
NCCR		L Yager	
FIC		N Tomitch	
NHGRI	M Holohan		

NIH Liaison Members:

CC	N Sebring		
CIT		J Mahaffey	
CSR	S Kim		
NLM		S Phillips	
OBSSR		D Olster	
OC		M Stern	
ODS	P Coates		
OD/ODP	B Portnoy		
OLPA			
ORWH			
PRCC		M Vogel-Taylor	

Agency Liaison Representatives:

CDC/NCCDPHP		D Galuska	
CDC/NCHS		V Burt	
FDA	K Ellwood		
HRSA	M Lawler		
IHS	T Brown		
ODPHP	K McMurry		
USDA	M Kretsch		D Klurfeld
DOD		K Friedl	
OPHS		M Terpeluk	

DNRC: R Fisher, W Johnson-Taylor, J Krebs-Smith, C McDade-Ngutter, J Pennington, K Regan, L Somuah.

Guests: R Ballard-Barbash (NCI), D Berrigan (NCI), C Davis (NCI), J Dwyer (ODS), J Hannah (NIA), M Horlick (NIDDK), A. Jerkins (CSR), S Krebs-Smith (NCI), B Kuczmariski (NIDDK), I Mabry (AHRQ), M McDowell (CDC, NCHS), and R Troiano (NCI).



Testimony
Before the Committee on Government Reform
United States House of Representatives

**The Mission and Work of the Office
of Dietary Supplements at the
National Institutes of Health**

Statement of

Paul M. Coates, Ph. D.

Director

Office of Dietary Supplements

National Institutes of Health

U.S. Department of Health and Human Services

**For Release on Delivery
Expected at 10:00 a.m.
on Thursday, March 9, 2006**

Mr. Chairman and Members,

Thank you for the opportunity to appear before you today at this hearing “The Regulation of Dietary Supplements: A Review of Consumer Safeguards”, representing the Office of Dietary Supplements (ODS) at the National Institutes of Health (NIH). I became Director of ODS in late 1999, and I have had the pleasure of appearing before the Committee twice before, in July 2002 and September 2004. At those visits, I provided you with some details about ongoing activities of ODS and other NIH Institutes and Centers (ICs) and I highlighted both the opportunities and the challenges that NIH faces as it develops a solid scientific base in the field of dietary supplements.

You have asked me today to address the work and mission of ODS, how we partner with other agencies and organizations, including the Food and Drug Administration



(FDA), to meet common goals, and how we work to educate the public regarding dietary supplements. These are all very important matters, ones that occupy me and my staff every day. I will also use this opportunity to tell you about the broader NIH involvement

in dietary supplement research. While ODS portrays itself as a catalyst in stimulating trans-NIH research activities in this area, the NIH ICs, as you will see, have had a longstanding commitment to research in this field.

Dietary supplements are widely used by American consumers, often in combination with other lifestyle measures such as diet and physical activity, for their potential benefits in health promotion and disease prevention. At a hearing of this Committee in 2004, I commented that population surveys, such as the National Health and Nutrition Examination Survey (NHANES), which is conducted by the Centers for Disease Control and Prevention (CDC) and funded in part by NIH organizations including ODS, show that 50% or more of American adults use supplements on a regular basis, primarily vitamins and minerals, but herbal and other supplements as well¹.

There are many hopes pinned on dietary supplements for improving health and reducing the risk of chronic disease, hopes realized when they have been subjected to modern scientific testing. Examples of these include:

- Folic acid to reduce the risk of neural tube defects, one of the most common birth defects.
- Iron supplementation during pregnancy to reduce the risk of maternal anemia.
- Vitamin B-12 supplementation for those (particularly among persons over 50) who cannot readily absorb food-bound vitamin B-12.

¹ Radimer K, Bindewald B, Hughes J, Irvin B, Swanson C, Picciano MF: Dietary supplement use by US adults: Data from the National health and Nutrition Examination Survey, 1999-2000. Amer J Epidemiol 160:339-349, 2004.

- Vitamin and antioxidant supplementation to reduce the rate of progression of macular degeneration.
- Use of vitamin D supplements by older adults and people exposed to insufficient sunlight to ensure adequate vitamin D status for optimal calcium absorption and reduced risk of bone loss.

With NIH support for dietary supplement research, much already has been accomplished. For example, preliminary results of a National Center for Complementary and Alternative Medicine (NCCAM)- and National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)-funded trial recently were published in the *New England Journal of Medicine* that suggest that the popular dietary supplements, glucosamine and chondroitin sulfate, may provide pain relief to patients with moderate-to-severe pain from knee osteoarthritis. Also, ODS, NCCAM, and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) are partnering to learn more about the potential of milk thistle to address chronic liver disease. In addition, there are ongoing clinical trials of dietary supplement ingredients funded by several components of the NIH. Examples include the National Cancer Institute (NCI)-funded SELECT trial to investigate the role of vitamin E and selenium in preventing prostate cancer, and a trial funded by several NIH Institutes and Centers (ICs) (NCCAM, ODS, and the National Institute on Aging – NIA) to explore whether the dietary supplement Ginkgo biloba can prevent or forestall the neurodegenerative changes associated with Alzheimer’s disease.

On the other hand, ingredients used in some dietary supplements on the market in the United States have not undergone the rigorous scientific testing needed to establish their efficacy and safety; some of these have been evaluated by NIH ICs or are under active early investigation. Other ingredients contained in some dietary supplements have been shown to be potentially harmful to some individuals; for example, research has shown that beta-carotene, instead of reducing lung cancer risk, may actually increase it among cigarette smokers. For still others, there are signals of concern (e.g., such as herb-drug interactions and adverse event reports, such as those shown for ephedra-containing dietary supplements) that need to be addressed in a scientifically sound manner.

The Work and Mission of the Office of Dietary Supplements

ODS was mandated by the Dietary Supplement Health and Education Act of 1994 (DSHEA). It was formally installed in the Office of the Director of NIH in 1995, and so we have just celebrated our tenth anniversary. Its mission is to “strengthen knowledge and understanding of dietary supplements by evaluating scientific information, stimulating and supporting research, disseminating research results, and educating the public to foster an enhanced quality of life and health for the U.S. population”.

ODS has in place its second 5-year Strategic Plan which was developed with input from a wide range of stakeholders. This Plan has been published and can be found on the ODS website (<http://ods.od.nih.gov>). The Strategic Planning process helped us considerably in assessing how far we had come since the first plan was published in 1998 and in guiding

ODS activities for the future. ODS has been able to embark on a number of important activities, including:

- Co-funding of dietary supplement research grants with other Institutes and Centers (ICs) at NIH. In FY 2005, ODS invested approximately \$15 million in co-funding 100 grants with 15 NIH ICs.
- Sponsoring conferences and workshops, again most often in collaboration with other ICs; since the inception of this program, ODS has sponsored more than 100 such events. These are open to the public and summaries are available on the ODS Web site.
- Developing a series of fact sheets on dietary supplements, in collaboration with NCCAM and the NIH Clinical Center.
- Initiating two important publicly accessible Web-based databases: the *International Bibliographic Information on Dietary Supplements (IBIDS)* developed jointly with the National Agricultural Library of the U.S. Department of Agriculture (USDA), which cites roughly 750,000 references to the world's literature, and *Computer Access to Research on Dietary Supplements (CARDS)* to track the Federal investment in dietary supplement research. The current CARDS data set describes the NIH investment from FY 1999 to FY 2004; over that period of time, NIH alone has invested over \$1 billion in supporting more than 3500 research projects related to dietary supplements.
- An especially important activity of ODS, in collaboration with NCCAM and the National Institute of Environmental Health Sciences (NIEHS), is its program of comprehensive Dietary Supplement Research Centers located in academic

settings around the country. There are six of these multidisciplinary Centers (located at Purdue University/University of Alabama at Birmingham; Iowa State University/University of Iowa; University of Illinois at Chicago; Pennington Biomedical Research Center; Memorial Sloan Kettering Cancer Center; and Wake Forest University) whose primary focus is interdisciplinary research on botanical dietary supplements.

The budget for ODS has grown, from \$3.5 million in FY 1999 to approximately \$27 million in FY 2006. This has permitted expansion of our research, education, and communications agenda into new and important areas:

- Evidence-based reviews of dietary supplement efficacy and safety, in collaboration with other NIH ICs and the Agency for Healthcare Research and Quality (AHRQ). I will return to this activity later in my testimony.
- Nationally representative surveys of dietary supplement use over time, e.g., the NHANES conducted by the Centers for Disease Control and Prevention (CDC). ODS contributes to this effort in several ways and is developing an accurate, easy-to-use, Web-based analysis tool to determine nutrient intakes from foods and supplements by various population groups.
- Development of a database of dietary supplement ingredients in collaboration with the U.S. Department of Agriculture (USDA); this is essential information for evaluating intakes from dietary supplements for the U.S. population and for monitoring intakes over time; it will provide much-needed information for the research community in designing and monitoring studies; when completed, it will

also be useful for the industry and for consumers to have ready availability to information on the composition of a broad range of marketed dietary supplement products.

- Development, validation, and dissemination of analytical methods and reference materials for dietary supplements, in collaboration with FDA and a number of private sector organizations², including the Association of Official Analytical Chemists (AOAC) International. This will be especially useful for researchers and industry users. AOAC International has also developed training activities for the industry and research communities as part of this program.
- Expansion of our information and communications program following a comprehensive evaluation and assessment.

In partnership with other NIH ICs, ODS funds research grants in areas such as (primary IC in parentheses):

- Alpha-tocopherol modulation of xenobiotic metabolism (NIDDK);
- Black cohosh and menopause-related anxiety (NCCAM);
- Phytoestrogens and aging: dose, timing, and tissue (NIA);
- Vitamin D and progression of knee osteoarthritis (NIAMS);
- Aging, vitamin E, and immune function (NIA);
- Chromium enhancement of insulin signaling (NCCAM);
- Mechanisms of alcohol-induced immunosuppression (National Institute on Alcohol Abuse and Alcoholism – NIAAA);

² Saldanha LG, Betz JM, Coates PM: Development of the analytical methods and reference materials program for dietary supplements at the National Institutes of Health. J AOAC Int. 87:162-165, 2004.

- Folate-genome interactions in colorectal cancer (NCI);
- Neuromodulatory effects of ginkgolides and bilobalides (National Institute of Mental Health);
- Modulation of autoimmunity by green tea polyphenols (NCCAM);
- Cranberry effects on *Candida albicans* adherence (NCCAM);
- Mechanisms of prostate cancer prevention by lycopene (NCI).

ODS sponsors workshops and conferences, again in collaboration with other organizations both within and outside NIH. These public meetings are valuable sources of information in assisting us to shape upcoming research activities. The outcomes of these conferences are summarized and available on the ODS Web site and are also often published in scientific journals. Some recent and upcoming conferences include:

- Diet, DNA Methylation Processes and Health, sponsored by NCI with participation by ODS, NIEHS, NIDDK, the National Heart, Lung, and Blood Institute (NHLBI), the National Institute of Child Health and Human Development (NICHD), and the FDA. This led to the funding of 10 grants by NCI and ODS.
- Three conferences on Dietary Supplement Use in Children, in Women, and in the Elderly (with NICHD, NCCAM, NIA, the NIH Office of Research on Women's Health, and others).
- Biomarkers for Diet/Cancer Relationships, jointly sponsored by FDA, NCI, and ODS.

- Animal Diets for Use in Studying Phytoestrogen Effects, jointly sponsored by NIEHS and ODS.
- Vitamin D and Health in the 21st Century, jointly sponsored by ODS and NICHD.
- An NIH State-of-the-Science Conference on the Role of Multivitamins/multiminerals in Chronic Disease Prevention, to be held in May 2006 and organized by the NIH Office of Medical Applications of Research with sponsorship from ODS and many other NIH ICs.

ODS Collaboration with Other Agencies and Organizations

The development of new areas of investigation relies on forging strategic partnerships with other agencies as well. A few current examples include Interagency Agreements with:

- The National Center for Health Statistics (NCHS) at CDC, to support improvements in the ability of NHANES to more accurately assess dietary supplement intake in the U.S., as well as biomarkers of supplement usage related to health outcomes.
- AHRQ, to develop evidence reports of dietary supplement efficacy and safety. The first of these, on ephedra efficacy and safety in weight management and athletic performance enhancement, was published in early 2003³. Other reports

³ Shekelle PG, Hardy ML, Morton SC et al: Efficacy and safety of ephedra and ephedrine for weight loss and athletic performance: a meta-analysis. JAMA 289:1537-1545, 2003.

have been completed (a series on the health effects of omega-3 fatty acids) or are underway on topics that include “Vitamin D Adequacy and Health” and “Relationship between Antioxidants in Berries and B Vitamins and Age-related Neurodegenerative Disorders”. A complete list of these is available on the ODS Web site at the URL given at the end of this testimony. In all of these cases, the goal of the reports is to give ODS and its NIH partners an objective and independent view of the current state of the science as we make decisions about further research priorities.

- FDA, to support the development and validation of analytical methods by AOAC International.
- FDA and the National Institute of Standards and Technology (NIST) in the Department of Commerce, to support development of standard reference materials.
- Numerous agencies of the USDA, the Department of Health and Human Services (DHHS), and the Department of Defense (DoD) to identify and enhance research in support of the development of Dietary Reference Intakes.
- NIEHS and the Food and Agriculture Organization/World Health Organization (FAO/WHO) to support development of an international conceptual model for nutrient risk assessment.

Broader NIH collaborations with other agencies in pursuit of these goals are also important. Let me provide two examples:

- Several components of NIH (including ODS, NCCAM, NIAMS, and the National Institute on Drug Abuse – NIDA) joined FDA and the Drug Enforcement

Administration (DEA) to fund the development of an animal model to evaluate the anabolic potential of steroids and steroid precursors, some of which are purported to be in dietary supplements.

- The National Toxicology Program (NTP), housed in NIEHS, is a joint activity with FDA's National Center for Toxicological Research (NCTR). The NTP is currently evaluating *Citrus aurantium*, an herb which has become popular in weight-loss products as a replacement for *Ephedra*, in standard animal toxicity and physiological models.

ODS has worked with partners outside of the government in a number of areas:

- Publication of an annual bibliography of outstanding research in dietary supplements, initially with the Consumer Healthcare Products Association. This effort, now fully under the auspices of ODS, is in its sixth year.
- Publication of "Botanical Pharmacognosy and the Microscopic Characterization of Botanical Raw Materials" by the American Herbal Products Association, supported in part by ODS.
- Publication of a summary (one for health professionals, one for dietary supplement industry readers) of the conference "Dietary Supplement Use in the Elderly" in collaboration with the Foundation for the National Institutes of Health and Virgo Publishing Inc.
- Publication of "What Supplements Are You Taking? Does Your Health Care Provider Know? It Matters and Here's Why", a brochure for the elderly, jointly

produced by FDA and ODS in collaboration with a number of private sector organizations.

- Collaboration with the National Consumers League on the topic of dietary supplements and anticoagulant therapies.
- Regular participation of ODS staff in educational and scientific sessions at academic meetings, consumer conferences, industry meetings, and expositions.
- Engaging with federal agencies such as the FDA, industry, non-governmental organizations and academia to develop, validate, and disseminate analytical methods and reference materials for dietary supplements.

I would like to stress a theme that runs through all of the activities that I have mentioned here. All were developed as the result of collaborations with other organizations at NIH, in other agencies of DHHS, and in other government departments. They could not have been accomplished otherwise. These collaborations enriched our program in many ways, including the sharing of scientific expertise, leveraging of limited resources, and the ability to reach a broader and more diverse group of stakeholders and audiences. In my view, this is crucial to the advancement of science and dissemination of information in the area of dietary supplements. From these collaborations, we know that there is a critical need for additional research on dietary supplements, particularly botanical products. To discover the full potential of dietary supplements for the public health, more must be learned about their safety and efficacy through basic and clinical research, product standardization, and improved research design. Further details of these and other interactions can be found on the ODS Web site (<http://ods.od.nih.gov>).

Public Education Efforts

At the end of the day, a major goal of our work is to improve the information available to consumers as they make healthcare choices. ODS employs a number of strategies to make information available to the public. Some of them have already been mentioned. Many of these resources are available on the ODS Web site and are listed below.

- Complete List of Dietary Supplement Fact Sheets and Related Information
http://ods.od.nih.gov/Health_Information/Information_About_Individual_Dietary_Supplements.aspx
- Dietary Supplements: Background Information (fact sheet)
<http://ods.od.nih.gov/factsheets/dietarysupplements.asp>
- What Supplements Are You Taking?
<http://ods.od.nih.gov/pubs/partnersbrochure.asp>
- Annual Bibliographies of Significant Advances in Dietary Supplements
http://ods.od.nih.gov/Research/Annual_Bibliographies.aspx
- CARDS (Computer Access to Research on Dietary Supplements Database)
http://ods.od.nih.gov/Research/CARDS_Database.aspx
- IBIDS (International Bibliographic Information on Dietary Supplements Database)
http://ods.od.nih.gov/Health_Information/IBIDS.aspx
- Complete List of ODS-Sponsored Evidence Reports on Dietary Supplement Efficacy and Safety

[http://ods.od.nih.gov/Research/Evidence-
Based_Review_Program.aspx#reportsinprogress](http://ods.od.nih.gov/Research/Evidence-Based_Review_Program.aspx#reportsinprogress)

Summing Up

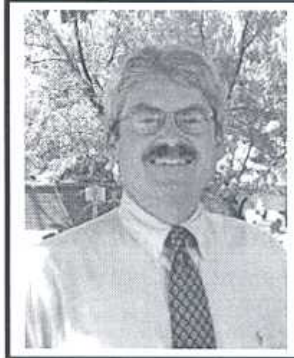
Mr. Chairman and Members of the Committee, I thank you again for inviting me to talk with you about the role that the Office of Dietary Supplements at NIH plays and to highlight some of its ongoing research and education efforts. I would be happy to answer your questions.

APPENDIX D: THE NEED FOR NOVEL ENGINEERING APPROACHES TO ADDRESS OBESITY

The Need for Novel Engineering Approaches To Address Obesity

James O. Hill, Ph.D.
Director, Center for Human Nutrition
University of Colorado Health Sciences Center

Monday, March 20, 2006
11:00 AM • National Science Foundation • Room 110



Obesity rates in US children and adults have steadily increased over the past 25 years and the rise is projected to continue. Obesity is a risk factor for type 2 diabetes, heart disease and cancer. Despite increasing recognition of the seriousness of the obesity epidemic, few strategies have proven successful in addressing the issue. In order to understand the etiology of obesity and to begin to develop strategies for its prevention/treatment, it is necessary to understand energy balance, and in order to understand energy balance, it is clear that adopting an engineering approach to the problem is critical.

Obesity can only arise when energy intake exceeds energy expenditure and prevention/treatment strategies must involve modifying energy intake and/or energy expenditure. The regulation of energy balance is complex and is affected by biological, behavioral and environmental factors. Further, any changes to one component of energy balance can affect the others. Obesity can theoretically arise over time from a very small imbalance between energy intake and energy expenditure. Such small imbalances cannot be detected using currently available methods and hence this presents an intriguing challenge to engineering and science communities. Present ways of addressing obesity have not been successful and new approaches are needed. The National Science Foundation (NSF) and the National Institutes of Health (NIH) are teaming to stimulate cross-agency and cross-disciplinary approaches to this pressing national problem.

Biography

James O. Hill, Ph.D. is Professor of Pediatrics and Medicine at the University of Colorado Health Sciences Center in Denver, Colorado. Dr. Hill also serves as the Director of the Center for Human Nutrition, a nutrition center funded by the National Institutes of Health. He holds a B.S. degree from the University of Tennessee and M.S. and Ph.D. degrees from the University of New Hampshire in Physiological Psychology. He is an honorary member of the American Dietetic Association. He served as Chair of the World Health Organization Consultation on Obesity in 1997. He is a Past President of the North American Association for the Study of Obesity (NASSO) and Past Regional Vice-President of the International Association for the Study of Obesity (IASO). He was also a Member of the Expert Panel on Obesity of the National Institutes of Health that developed U.S. guidelines for the treatment and prevention of obesity. He is the recipient of a prestigious MERIT award from NIH. He was the recipient of the 2004 Centrum Center Award from the American Society of Nutritional Sciences. He is a member of the editorial boards of *Obesity Research*, *The American Journal of Clinical Nutrition* and *The International Journal of Obesity*. He is Editor-in-Chief of *Obesity Management*.

Dr. Hill is co-founder of *America on the Move*, a national weight gain prevention initiative that aims to inspire Americans to make small changes in how much they eat and how much they move to prevent weight gain. Dr. Hill established *The Colorado Weigh*, a behavioral weight management program that is offered to the public. He is the author of the *Step Diet Book*, published in June 2004.

For Information or Comment: Alfonso Ortega aortega@nsf.gov 703-292-7494