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UNITED STATES DISTRICT COURT DISTRICT OF NEW JERSEY

John M. Agnello Melissa E. Flax CARELLA, BYRNE, BAIN, GILFILLAN, CECCHI, STEWART & OLSTEIN 5 Becker Farm Rd. Roseland, NJ 07068 Telephone: 973.994.1700 Facsimile: 973.994.1744 Kenneth J. Jurek Daniel N. Christus Linda A.O. Lamberson McDermott Will & Emery LLP 227 West Monroe Street, Suite 4400 Chicago, Illinois 60606-5096 Telephone: 312.372.2000 Facsimile: 312.984.7700 ATTORNEYS FOR MARS, INC. MARS, INC., Plaintiff, Civil Action No. 2:07-CV-1574(SRC)(MF) VS. NATRACEUTICAL, S.A., NATRA U.S., INC. Defendants.

> COMPENDIUM OF EXHIBITS IN SUPPORT OF PLAINTIFF'S ORDER TO SHOW CAUSE

| Exhibit<br>No. | Exhibit Title   |  |
|----------------|---|--|
| 1              | Decl. of Harold. H. Schmitz in Support of Plaintiff Mars' Application for an Order to Show Cause for Preliminary Injunction.  |  |
| 2              | Natraceutical website, < <a href="http://www.natraceutical.com/e_natra7.asp">http://www.natraceutical.com/e_natra7.asp</a> , April 9, 2007.   |  |
| 3              | Excerpt from Grupo Natra Catalyst.  |  |
| 4              | Food Technology Buyer's Guide, <a href="http://buyersguide.ift.org/cms/?pid=3003&amp;companyId=6000425">http://buyersguide.ift.org/cms/?pid=3003&amp;companyId=6000425</a> , Mar. 29, 2007.                           |  |
| 5              | CocoaVia® brochure.   |  |
| 6              | The CocoaVia Story, < <a href="http://www.cocoavia.com/story/">http://www.cocoavia.com/story/</a> , Mar. 29, 2007.  |  |
| 7              | Cocoapro® Fact Sheet.   |  |
| 8              | CocoaVia Product Fact Sheet.  |  |
| 9              | Marlene M. Machut, Research Finds Flavanols in Cocoa May Help Treat Diabetes, Strokes and Dementia, July 25, 2005.  |  |
| 10             | Lori Fromm, Flavanols in Cocoa May Offer Benefits to the Brain, Feb. 18, 2007.  |  |
| 11             | Mars Breaks New Ground in Heart Health with CocoaVia, Sept. 14, 2005, <a href="http://www.masterfoodsnews.com/prodprint.asp?prodid=265">http://www.masterfoodsnews.com/prodprint.asp?prodid=265</a> , March 22, 2007. |  |
| 12             | Elizabeth Schreiber, Start a Heart-Healthy Diet During American Heart Month: It's Easy and Delicious to be Good to Your Heart, Feb. 1, 2006.  |  |
| 13             | Decl. of Brice S. Russell in Support of Plaintiff Mars' Application for an Order to Show Cause for Preliminary Injunction.  |  |
| 14             | The CocoaVia Brand Difference, <a href="http://www.cocoavia.com/products/">http://www.cocoavia.com/products/</a> , March 29, 2007.  |  |
| 15             | U.S. Patent No. 6,312,753, entitled "Cocoa Components, Edible Products Having Enriched Polyphenol Content, Methods of Making Same and Medical Uses."  |  |
| 16             | U.S. Patent No. 6,790,966, entitled "Cocoa Extracts Containing Solvent-Derived Cocoa Polyphenols from Defatted Cocoa Beans."  |  |
| 17             | U.S. Patent No. 5,554,645, entitled "Antineoplastic Cocoa Extracts and Methods for Making and Using the Same."  |  |
| 18             | Excerpts from Merriam-Webster's Collegiate Dictionary (10th ed. 1993).  |  |
| 19             | Certificate of Analysis: CCX Reduced Fat 12% Polyphenols.   |  |
| 20             | Decl. of John F. Hammerstone in Support of Plaintiff Mars' Application for an Order to Show Cause for Preliminary Injunction.   |  |
| 21             | 1/15/03 Preliminary Amendment to Application for the '966 patent.   |  |
| 22             | 10/1/03 Amendment to Application for the '966 patent.   |  |
| 23             | Certificate of Analysis: CocoanOX Extract 45% Polyphenols.  |  |
| 24             | Christiana Indus., Inc. v. Empire Elecs. Inc., Case No. 06-12568, 2006 U.S. Dist. LEXIS 54210, at *5 (E.D. Mich. Aug. 4, 2006).   |  |
| 25             | Lawman Armor Corp. v. Winner Int'l, Inc., Case No. 01-1605, 2002 U.S. Dist. LEXIS 1431, at *50-51 (E.D. Pa. Jan. 23, 2002).   |  |
| 26             | IFT 2007 Annual Meeting and Food Expo Exhibitor List, <a href="http://www.am-fe.ift.org/cms/?pid=1000373">http://www.am-fe.ift.org/cms/?pid=1000373</a> >, Feb. 27, 2007.   |  |

| 27 | Natra U.S., Inc. company information page, IFT 2007 Annual Meeting and Food Expo website, <a href="http://www.am-fe.ift.org/cms/?pid=1000025&amp;companyId=6000425">http://www.am-fe.ift.org/cms/?pid=1000025&amp;companyId=6000425</a> , Feb. 27, 2007. |
|----|--|
| 28 | IFT 2007 Annual Meeting and Food Expo Benefits, <a href="http://www.am-fe.ift.org/cms/?pid=1000249">http://www.am-fe.ift.org/cms/?pid=1000249</a> , Feb. 27, 2007.   |
| 29 | IFT 2007 Annual Meeting and Food Expo Marketing, <a href="http://www.am-fe.ift.org/cms/?pid=1000252">http://www.am-fe.ift.org/cms/?pid=1000252</a> , Mar. 29, 2007.  |
| 30 | Allan Block Corp. v. E. Dillon & Co., Case No. 04-3511, 2005 U.S. Dist. LEXIS 13566, at *20 (D. Minn. July 1, 2005).   |
| 31 | What is Acticoa cocoa and chocolate?, Acticoa website, <a href="http://www.acticoa.com/en/2">http://www.acticoa.com/en/2</a> , Mar. 29, 2007.  |

## **EXHIBIT 1**

## UNITED STATES DISTRICT COURT DISTRICT OF NEW JERSEY

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ATTORNEYS FOR MARS, INC.

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| MARS, INC.,                                | )<br>)  |
|--|---|
| Plaintiff,                                 | ) Civil Action No. 2:07-CV-1574 (SRC)(MF)   |
| vs.  NATRACEUTICAL, S.A., NATRA U.S., INC. | DECLARATION OF HAROLD H. SCHMITZ IN SUPPORT OF PLAINTIFF MARS' APPLICATION FOR AN ORDER TO SHOW CAUSE |
| Defendants.                                | ) FOR PRELIMINARY INJUNCTION )  |

- I, Harold H. Schmitz, Ph.D., hereby declare as follows:
- I am the Chief Science Officer for Mars, Inc. ("Mars") and have held this position since February 2005. See H. H. Schmitz Curriculum Vitae, attached as Exhibit 1 hereto.
- Prior to my current position at Mars, I was the Director of Science and External 2. Research for M&M/Mars, a division of Mars, Inc. (now known as Masterfoods) from October 2000 through January 2005. I also was a Group Manager for the Analytical and Applied

Sciences division at M&M/Mars from June 1998 through April 2002, and a Senior Research Scientist at M&M/Mars from June 1996 through May 1998. My career at M&M/Mars began in November 1993, where I was hired to be a Research Scientist in the Scientific Affairs division and held this position until I first was promoted in May 1996. Id. at p. 1.

- 3. Prior to my career with Mars, I was a United States Department of Agriculture ("USDA") National Needs Research Fellow from 1990 to 1993. Id. at p. 2. In May 2003, I was a USDA Panel Member for the National Research Initiative Grants Program on Food Characterization. *Id.* at pp. 2.
- 4. I also am currently a Member of Government-University-Industry Research Roundtable at the National Academy of Sciences, and have been a Member of this group since 2001. *Id.* at p. 2.
- 5. In 1987, I received a Bachelor of Science in Food Science from the University of Arkansas, in Fayetteville, Arkansas, and was awarded the Institute of Food Technologists Undergraduate Scholarship from 1985 through 1987. Id. at pp. 1-2. In 1990, I received a Masters in Science in Food Science from the University of Illinois, in Champaign, Illinois. Finally, in 1993, I received my Doctoral degree in Food Science, with a minor in Organic Chemistry, from the North Carolina State University, in Raleigh, North Carolina. Id. at p. 1.
- 6. My research interests center around the biological and engineering sciences as they relate to food production and its influence on human and companion animal health. Specifically, I am interested in the application of analytical sciences to agricultural, food, medical, veterinary and nutrition sciences, with a special emphasis on understanding the metabolism and function of dietary phytochemicals in the context of human health and nutrition and vascular biology as affected by dietary constituents. Id. at p. 3.

- 7. I have authored and co-authored numerous peer-reviewed publications in a variety of relevant journals that reflect my research interests, as well as book chapters and selected abstracts. Id. at 3-9. I also have given numerous presentations and lectures that reflect my research interests, and have received several awards and honors in connection with my work, including the award for Outstanding Research Presentation at the Triangle Chromatography Conference in Raleigh, North Carolina, in 1993. Id. at pp. 2, 8-11.
- I have personal knowledge of the following facts and, if called as a witness, could 8. and would competently testify thereto.
- Mars is one of the world's top producers of chocolate, in addition to being a 9. leading global manufacturer of various name-brand food products, such as Uncle Ben's rice and confectionary food items such as M&M's candies and Mars, Milky Way, Snickers, Dove and Twix bars.
- Mars also has had a longstanding commitment to health research, particularly 10. focusing on the health and nutritional aspects in naturally occurring food compounds. One such research project has involved the family of polyphenol compounds found in cocoa that includes flavanols and the subclass often referred to as procyanidins.
- Over recent years, these cocoa polyphenol ("CP") compounds have increasingly 11. been lauded and extensively researched by the scientific community including medical and nutrition science. The growing attention that CPs have received has been due, in large part, to Mars' involvement in cocoa science research.
- Indeed, Mars has dedicated more than 15 years and has invested more than 30 12. million dollars to lead cocoa polyphenol science research and related product development, and in particular, the study of the health and nutritional aspects of CPs.

- 13. Mars has become the global pioneer in CP science research.
- 14. Mars has more than 30 patents relating to CPs. I personally am a named inventor in nine U.S. patents relating to CPs, including U.S. Patent No. 6,312,753, which is one of the patents at issue in this case. *Id.* at pp. 11-12.
- 15. Mars also has become a leader in educating the public of the benefits of various cocoa-based formulations.
- I believe that Mars' original idea going back to the early 1990s of researching the 16. health and nutrition science aspects of CPs went against the prevailing trend and wisdom in the industry at the time. The chocolate industry then was focused primarily on understanding sensory aspects, such as flavor. Mars' vision to invest the time and resources necessary to develop methods of processing cocoa beans to extract and retain as many polyphenols as possible was a truly revolutionary idea. I personally have been involved in this research.
- 17. Mars' involvement in CP research has led to the discovery of many scientific breakthroughs and technological advances with respect to the health and nutritional benefits of cocoa polyphenols, and specifically cocoa flavanols.
- 18. From a pure science perspective, flavanols represent one family of compounds that belong to a larger group of compounds called flavanoids. In turn, flavanoids represent a subcategory of polyphenols. Whereas polyphenols, the broadest category, may include more than 10,000 compounds, flavanoids include more than 5,000 compounds and flavanols, including the procyanidin subclass, likely comprise several hundred when stereoisomers of individual flavanols are considered. Mars first identified polyphenols as being linked to health benefits and then continued with its efforts to further characterize the polyphenol compounds found in cocoa to ascertain which particular polyphenols accounted for health benefits. Today, at Mars, we tend

to speak more about flavanols than the broader category of polyphenols, because our continuing research has led us to this specific subcategory of polyphenols. However, CPs are sometimes referred to as flavanols.

- 19. Scientists, medical doctors and nutritional experts alike have discovered and attributed real health benefits attributable to CPs, including the possibility of preventing or improving cardiovascular disease, diabetes, dementia and overall vascular health and blood flow. These ground-breaking discoveries have received much acclaim from the medical and nutrition science communities alike. Mars' research, reflected in the more than 100 peer-reviewed publications regarding CPs authored by Mars' scientists and Mars' research partners in universities, has been the impetus for the research now occurring in this area.
- 20. Mars' research also has led it to develop patented processes for maximizing the retention and extraction of polyphenols found in cocoa. These processes and resulting products are known under the Cocoapro® trademark. For example, Dove® chocolates, one of Mars' product offerings, now are made from cocoa derived from Mars' patented processes that maximize polyphenol content. This chocolate retains exceptional sensory characteristics while delivering measurable effects on vascular health because of its relatively high polyphenol content. A representative copy of the packaging for one Dove product, "Dove Rich Dark Chocolate," is attached as Exhibit 2 hereto. On the front, it bears Mars' healthy heart trademark with the tagline "Natural Source of Flavanols." On the back side, the packaging contains the Cocoapro trademark.
- Mars' scientists also have developed novel ways to measure and characterize 21. polyphenol content in foods, as well as novel post-harvesting procedures and technologies which help maximize the amount of polyphenols available in a variety of formulas.

- Mars has become a leader in developing a market for polyphenol-rich, cocoa-22. based products.
- Specifically, Mars has developed, uses, sells and is attempting to license a line of 23. CP-rich ingredients, namely, polyphenol-enhanced cocoa powders and extracts marketed under the Cocoapro trademark. On July 6, 2007, at a Botanical Conference in Chicago, Mars plans to make announcements regarding this growing aspect of the business.
- 24. Mars has developed various polyphenol-rich, cocoa-based end products that use its CP ingredients. For example, since about March 2005, Mars has sold at the retail level in the health and nutrition business segment, a CP enriched line of products under the trademark CocoaVia®. Mars' CocoaVia products contain a patented combination of Cocoapro-cocoa polyphenols and sterols. These products retain exceptional sensory characteristics, while also containing high levels of polyphenols responsible for known health benefits and, as a result, they deliver measurable effects on vascular health and blood flow. A representative copy of a CocoaVia package is attached as Exhibit 3 hereto.
- Based upon robust research and clinical testing, the packaging for CocoaVia 25. products prominently advises consumers that:

"CocoaVia® is made using the Cocoapro process. This guarantees the retention of high levels of naturally occurring cocoa flavanols to help promote healthy circulation. These cocoa flavanols are similar to those flavanols found in red wine and green tea."

In fact, CocoaVia products have enhanced CP content derived from the addition of Mars patented CP-rich powder and/or extract.

- 26. Cocoapro is the most studied cocoa product in the world in terms of discovering the health impact and benefits of CPs.
  - 27. When Mars first embarked on its plan to research the health benefits of CPs and

to develop a process by which it could preserve, maximize and extract the amount of CPs available after the cocoa was processed, its U.S. competitors appeared to ignore these efforts. Polyphenols responsible for known health benefits are destroyed during the traditional methods of processing cocoa which focused on flavor development. These competitors apparently believed it was not worth the effort to retain CPs.

- Natraceutical S.A. and/or Natra U.S., Inc. are competitors of Mars' Cocoapro 28. products; and, as such, their target market for CocoanOX and related products includes most, if not all, of Mars' competitors and/or potential or current customers.
- 29. If Natraceutical and/or Natra U.S. are able to continue to promote and sell their CocoanOX products generally, including to exhibit and sell them specifically at the IFT 2007 Annual Meeting and Food Expo, in Chicago, Illinois, which begins on July 28, 2007, Mars' competitors may purchase CocoanOX in large quantities in order to make and sell their own line of products that directly compete with Mars' CP-rich cocoa products. Thus, Mars will likely lose substantial sales, market share and licensing potential for its Cocoapro products.
- 30. Moreover, Natraceutical's CocoanOX will be offered to the same companies with whom Mars now is in negotiation for the sale and licensing of Mars' Cocoapro powders and extracts. The availability of CocoanOX will undermine Mars' efforts. It may erode pricing and sales. Significantly, Natraceutical's and Natra U.S.'s approach also profoundly affects product reputation in an adverse way and indeed threatens to destroy and/or dilute consumer's perceptions about CPs. Since CocoanOX apparently is available for purchase by anyone, it could be used in products in amounts with absolutely no efficacy. For example, what effect would CocoanOX have if used in barbecue sauce for ribs or as a supplement for french fries? No one knows. To the best of our knowledge, Natraceuticals has not researched that issue. In my

experience, an inferior product or the failure of one company's product brand to produce claimed results has strong potential to destroy the reputation of the entire category of similar products, even as to other companies whose similar product brands are proven to perform as claimed. The scientifically uncontrolled sales by Natraceutical and Natra U.S. will destroy what Mars has accomplished and may well eliminate the remarkable potential CPs have for addressing several of the most serious public health issues and healthcare costs now facing the population of the United States.

- To prevent the disparagement of CPs generally, and Mars' CP products in 31. particular, Mars will sell and license its CP ingredients only for products that can be proven to produce the benefits that Mars has accomplished in specific food products.
- 32. Natraceutical apparently has no limitations, and sales of its infringing products without appropriate scientific restraint threatens to destroy the entire CP market, including Mars' CP brands and products, as well as all of the advances and research in CP technology.
- Companies other than Natraceutical and Natra U.S. have developed CP 33. ingredients outside the United States. Barry Callebaut is one such company. It has a product known as Acticoa that is a cocoa polyphenol powder or extract. To date, we have no evidence that suggests that Barry Callebaut has sold this product in the U.S. or to companies that would use it in the U.S.
- If Natraceutical and Natra U.S. continue to sell and offer to sell their CocoanOX 34. products in the United States, Barry Callebaut and others may be encouraged to infringe Mars' patents as well, forcing Mars to engage in yet more litigation to safeguard its technology and its patents.
  - Mars is registered to exhibit its polyphenol-enhanced products at the IFT Expo 35.

trade show in July 2007. This trade show begins only a few weeks after Mass plans to make announcements regarding its growth and direction in the coope polyphenol business.

Mars continues to research new and more effective ways to advance its CP 36. technology. New products are planned for introduction in the near future. Pharmaceutical and other nutrition formulations are being evaluated and tested. Mars now is at a critical stage in its development and launch of healthy products and medicines rich in CP. It is vital to Mars and to CPs generally that Natraceutical and Natra U.S. be stopped immediately from destroying that which Mars built over more than 15 years with the investment of more than \$30 million.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct and that I signed this Declaration in on April 10 1, 2007.

> By. Clarold H. Schmitz, Ph.D. Title: Chief Science Officer

Macs, Inc.

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## Exhibit 1

## **CURRICULUM VITAE**

#### **Harold Herman Schmitz**

Manager, Science and External Research

Mars, Incorporated

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McLean, VA 22101-3883

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#### Education

University:

North Carolina State University, Raleigh, NC

Degree:

Ph.D. (1993)

Major:

Food Science

Minor: Organic Chemistry

University:

University of Illinois, Champaign, IL

Degree: Major:

M.S. (1990) Food Science

University:

University of Arkansas, Fayetteville, AR

Degree:

B.S. (1987)

Major:

Food Science

### **Professional Experience**

Chief Science Officer, Mars, Incorporated, February 2005 - Present

Director, Science and External Research, Mars, Incorporated, October 2000 - January 2005

Group Manager, Analytical and Applied Sciences, M&M/Mars, Incorporated, June 1998 - April 2002

Senior Research Scientist, Fundamental Research, M&M/Mars, Incorporated, June 1996 - May 1998

Visiting Faculty Member, Department of Nutrition, University of California, Davis, July 1995 - Present

Research Scientist, Scientific Affairs, M&M/Mars, Incorporated, November 1993 - May 1996

United States Department of Agriculture National Needs Research Fellow, Department of Food Science, North Carolina State University, 1990 – 1993

Research Assistant, Department of Food Science, University of Illinois, 1988 – 1990

#### Awards and Honors

Eagle Scout, Boy Scouts of America

Institute of Food Technologists Undergraduate Scholarship, 1985 – 1987

- Outstanding Research Presentation, Triangle Chromatography Conference, Raleigh, NC 1993
- Helped develop and co-chair symposium entitled "Antioxidant Properties of Phytochemicals - Application to Health Promotion and Disease Prevention" at the Sixth Annual Meeting of the Oxygen Society (1999) in New Orleans, USA
- Developed and chaired symposium entitled "Food, Phytochemicals and Chocolate: Protecting Against and Preventing Cardiovascular Disease" at the American Dietetics Association Annual Meeting (2000) in Denver, USA
- Helped develop and chaired session entitled "Nutrition and Infection" at the Nutrition and Oral Infectious Disease Workshop, Forsyth Dental Center (2000) in Boston, USA
- Marie Kelso Award for best presentation at 55th annual Pennsylvania Manufacturing Confectioners Association (2001) in Hershey, PA, USA

#### Professional Activities

- Occasional invited reviewer for Journal of Nutrition, Journal of Agricultural and Food Science, Journal of Food Science and Proceedings of the Society for Experimental Biology and Medicine
- Member, Government-University-Industry Research Roundtable, National Academy of Sciences, 2001 - Present
- Panel Member, United States Department of Agriculture National Research Initiative Grants Program on Food Characterization, May 2003, Washington, DC
- Participant, DSO Tech, Defense Advanced Research Projects Agency, Defense Sciences Office, July 2003, San Diego

### Major Research Interests

Application of analytical sciences to agricultural, food, medical, veterinary and nutrition sciences

Metabolism and function of dietary phytochemicals in modulating human health and nutrition

Vascular biology as affected by dietary constituents

#### Society Memberships

Sigma Xi

Gamma Sigma Delta

#### **Peer-Reviewed Publications**

- Schmitz HH, Artz WE, Poor CL, Dietz JM and Erdman JW (1989) High-performance liquid chromatography and capillary supercritical-fluid chromatography separation of vegetable carotenoids and carotenoid isomers. J Chromatogr 479:261-268.
- Schmitz HH, Poor CL, Wellman RB and Erdman JW (1991) Concentrations of selected carotenoids and vitamin A in human liver, kidney and lung tissue. J Nutr 121:1613-1621.
- Schmitz HH, van Breemen RB and Schwartz SJ (1992) Fast-atom bombardment and continuous-flow fast-atom bombardment mass spectrometry in carotenoid analysis. Meth Enzymol 213:322-336.
- Schmitz HH, Poor CL, Gugger EG and Erdman JW (1993) Analysis of carotenoids in human and animal tissues. Meth Enzymol 214:102-116.
- Van Breemen RB, Schmitz HH and Schwartz SJ (1993) Continuous-flow fast atom bombardment liquid chromatography/mass spectrometry of carotenoids. Analy Chem 65:965-969.
- Schmitz HH, Schwartz SJ and Catignani GL (1994) Resolution and quantitation of the predominant geometric beta-carotene isomers present in human serum using normal-phase HPLC. J Agric Food Chem 42:2746-2750.

- Schmitz HH, Emenhiser C and Schwartz SJ (1995) HPLC separation of geometric carotene isomers using a calcium hydroxide stationary phase. J Agric Food Chem 43:1212-1218.
- van Breemen RB, Schmitz HH and Schwartz SJ (1995) Fast-atom bombardment tandem mass spectrometry of carotenoids. J Agric Food Chem 43:384-389.
- Schmitz HH (1997) Antioxidants and oxidative stress: A complex health and nutrition issue. JAm Dietetic Assoc. 97:467.
- Hammerstone JF, Lazarus SA, Mitchell AE, Rucker RB and Schmitz HH (1999) Identification of procyanidins in cocoa (Theobroma cacao) and chocolate using high-performance liquid chromatography/mass spectrometry. J Agric Food Chem 47:490-496.
- Lazarus SA, Adamson GE, Hammerstone JF and Schmitz HH (1999) High-performance liquid chromatography/mass spectrometry analysis of proanthocyanidins in foods and beverages. J Agric Food Chem 47:3693-3701.
- Adamson GE, Lazarus SA, Mitchell AE, Prior RL, Cao G, Jacobs PH, Kremers BG. Hammerstone JF, Rucker RB, Ritter KA and Schmitz HH (1999) HPLC method for the quantification of procyanidins in cocoa and chocolate samples and correlation to total antioxidant capacity. J Agric Food Chem 47:4184-4188.
- Coalition of Health Professionals for Food Choices for the 21st Century (1999) Food choices for the 21st century: A word to our collegues. Nutr Today 34:170-173.
- Mao TK, Powell JJ, van de Water J, Keen CL, Schmitz, HH and Gershwin ME (1999) The influence of cocoa procyanidins on the transcription of interleukin-2 in peripheral blood mononuclear cells. Int J Immunotherapy 15:23-29.
- Lazarus SL, Hammerstone JF and Schmitz HH (1999) Chocolate contains flavonoids not found in tea. Lancet 354:1825.
- Mao TK, Powell J, van de Water J, Keen CL, Schmitz HH, Hammerstone JF and Gershwin ME (2000) The effect of cocoa procyanidins on the transcription and secretion of interleukin-1 beta in peripheral blood mononuclear cells. Life Sciences 66:1377-1386.
- Bearden, MM, Pearson DA, Rein D, Chevaux, KA, Carpenter DR, Keen CL and Schmitz HH (2000) Potential cardiovascular health benefits of procyanidins present in chocolate and cocoa. In "Caffeinated Beverages: Health Benefits, Physiological Effects and Chemistry" (TH Parliament, CT Ho and P Schieberle, eds), ACS Symposium Series 754, American Chemical Society, Washington, DC
- Rein D, Paglieroni TG, Wun T, Pearson DA, Schmitz HH, Gosselin R and Keen CL (2000) Cocoa inhibits platelet activation and function. Am J Clin Nutr 72:30-35.

- Hammerstone JF, Lazarus SA and Schmitz HH (2000) Proanthocyanidin content and variation in some commonly consumed foods. J Nutr 130:2086S-2092S.
- Mao T, van de Water J, Keen CL, Schmitz HH and Gershwin ME (2000) Cocoa procyanidins and human cytokine transcription and secretion. J Nutr 130:2093S-2099S.
- Rein D, Lotito S, Holt RR, Keen CL, Schmitz HH and Fraga CG (2000) Epicatechin in human plasma: in vivo determination and effect of chocolate consumption on plasma oxidation status. J Nutr 130:2109S-2114S.
- Wang JF, Schramm DD, Holt RR, Ensunsa JL, Fraga CG, Schmitz HH and Keen CL (2000) A dose-response effect from chocolate consumption on plasma epicatechin and oxidative damage. J Nutr 130:2115S-2119S.
- Rein D, Paglieroni TG, Pearson DA, Wun T, Schmitz HH, Gosselin R and Keen CL (2000) Cocoa and wine polyphenols modulate platelet activation and function. J Nutr 130:2120S-2126S.
- Mao TK, Powell JJ, van de Water J, Keen CL, Schmitz HH and Gershwin ME (2000) The effect of cocoa procyanidins on the transcription and translation of interleukin-4. J Med Food 3:107-114.
- Lotito SB, Actis-Goretta L, Renart ML, Caligiuri M, Rein D, Schmitz HH, Steinberg F, Keen CL and Fraga CG (2000) Influence of oligomer chain length on the antioxidant activity of procyanidins. Biochem Biophys Res Comm 276:945-951.
- Pearson DA, Schmitz HH, Lazarus SA and Keen CL (2001) Inhibition of in vitro low-density lipoprotein oxidation by oligomeric procyanidins present in chocolate and cocoas. Meth Enzymol 335:350-360.
- Lazarus SA, Hammerstone JF and Schmitz HH (2001) HPLC/MS analysis of proanthocyanidins in food and beverages. Meth Enzymol 335: 46-57.
- Schramm DD, Wang JF, Holt RR, Ensunsa JL, Gonsalves JL, Lazarus SA, Schmitz HH. German JB and Keen CL (2001) Chocolate procyanidins decrease the leukotriene/prostacyclin ratio in humans and human aortic endothelial cells. Am J Clin Nutr 73:36-40.
- Fraga C, Lazarus SA, Hammerstone JF, Schmitz HH and Keen CL (2001) More Antioxidants in Cocoa (Reply)? J Nutr 131:835.
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- Holt RR, Schramm DD, Keen CL, Lazarus SA and Schmitz HH (2002) Chocolate consumption and platelet function. J Am Med Assoc 287:2212-2213.
- Zhu QY, Holt RR, Lazarus SA, Ensunsa JL, Hammerstone JF, Schmitz HH and Keen CL (2002) Stability of the Flavan-3-ols Epicatechin and Catechin and Some Related Dimeric Procyanidins Derived from Cocoa. J Agric Food Chem 50:1700 -1705.
- Hannum S, Schmitz HH and Keen CL (2002) Chocolate: A heart healthy food? Show me the science! Nutr Today 37:103-109.
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#### **Invited Book Chapters**

- Schmitz HH and Chevaux K (2000) Defining the role of dietary phytochemicals in modulating human immune function. In "Nutrition and Immunology: Principles and Practice" (ME Gershwin, JB German and CL Keen, eds), pp 107-119, Humana Press, Inc., Totowa, NJ.
- Lazarus SA, Kelm MA, Waechter GA, Hammerstone JF and Schmitz HH (2003) Analysis and purification of proanthocyanidin oligomers. In "Methods in Polyphenol Analysis" (ed. C Santos-Buelga and G Williamson), Royal Society of Chemistry, London, pp. 267-283.

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#### Selected Abstracts and Presentations

- Schmitz HH and Schwartz SJ (1991) Identification of selected cartenoids in blueberries. Institute of Food Technologists Annual Meeting, Dallas, USA.
- Van Breemen RB, Schmitz HH and Schwartz SJ (1991) Separation and identification of carotenoids using continuous-flow fast atom bombardment liquid chromatography/mass spectrometry. American Society of Mass Spectrometrists Conference on Mass Spectrometry and Allied Topics, Nashville, USA.
- Puspitasari-Nienaber NL, Schmitz HH and Schwartz SJ (1992) Carotenoid composition of unique Indonesian plant foods. Institute of Food Technologists Annual Meeting, New Orleans, USA.
- Schmitz HH, Schwartz SJ and Catignani GL (1993) Resolution of geometric betacarotene isomers in human serum. Tenth International Symposium on Carotenoids, Trondheim, Norway.
- Schmitz HH, Simunovic N and Schwartz SJ (1994) Stability of selected carotenoids added to infant formula during aseptic processing, packaging, and storage. Institute of Food Technologists Annual Meeting, Atlanta, USA.
- Camplen LM, Olin KL, Schmitz HH, Applegate LA, German JB, Shaffrath JD, Schwartz SJ and Keen CL (1996) An antioxidant-fortified energy bar can reduce exerciseinduced oxidative stress. Experimental Biology Annual Meeting, Washington, DC, USA.
- Applegate LA, Camplen LM, Olin KL, Shaffrath J, German JB, Schmitz HH and Keen CL (1996) Influence of an antioxidant nutrient fortified food product and strenuous exercise on antioxidant enzyme systems. American College of Sports Medicine Annual Meeting, Indianapolis, USA.
- Schmitz HH (1999) Potential cardiovascular health benefits of oligomeric procyanidins in chocolate and cocoa. American Chemical Society Annual Meeting, Anaheim, CA.
- Schmitz HH, Rein D, Pearson DA and Keen CL (1999) Cacao oligomeric procyanidins decrease LDL oxidation and lipoxidase activity. Experimental Biology Annual Meeting, Washington, DC, USA.

- Rein D, Pearson DA, Paglieroni T, Wun T, Schmitz HH and Keen CL (1999) Modulation of platelet activation by cacao or red wine polyphenols. Experimental Biology Annual Meeting, Washington, DC, USA.
- Schmitz HH (1999) Oligomeric procyanidin composition of plant foods. Symposium on Antioxidant Properties of Phytochemicals - Application to Health Promotion and Disease Prevention, Sixth Annual Meeting of the Oxygen Society, New Orleans, USA
- Schmitz HH and Romancyk LJ (2000) Chocolate flavonoids: in vitro evidence suggesting a cardiovascular health benefit. 166th National Meeting of the American Association for the Advancement of Science, Washington, DC, USA.
- Schmitz HH, Schramm DD, Wang, JF, Holt RR, Ensunsa JL, Gonsalves JL, Lazarus SA, Hammerstone JF and Keen CL (2000) Clinical evidence suggesting that chocolate consumption confers cardiovascular health benefits. Proceedings from the International Conference on Exercise and Nutrition for Better Health and Chronic Diseases, Beijing, China.
- Schmitz HH (2002) Flavonoids: What they are and where you can find them. 168<sup>th</sup> National Meeting of the American Association for the Advancement of Science, Boston, USA.

### Invited Presentations and Lectures

- Functional significance of moderate antioxidant food fortification during strenuous exercise and training (1998) Workshop on Antioxidants and the Effects of Oxidative Stress in Military Personnel, National Academy of Sciences, Washington, DC, USA
- Potential cardiovascular health benefits of cocoa flavonoids (1999) Vascular Biology Working Group, American Heart Association Annual Meeting, November, Atlanta, USA
- Clinical evidence suggesting that chocolate consumption confers cardiovascular health benefits (2000) International Conference on Exercise and Nutrition for Better Health and Chronic Diseases, June 11-14, Beijing, China.
- Potential cardiovascular health benefits of chocolate polyphenols (2000) Commonwealth Science and Industry Research Organization, June, Adelaide, Australia.
- Potential heart health benefits of cocoa polyphenols in chocolate (2000) A Satellite Symposium entitled "Chocolate, Antioxidants, Polyphenols and Cardiovascular Health, 22<sup>nd</sup> Congress of the European Society of Cardiology, August 26-30, Amsterdam, The Netherlands.

- Defining the role of phytochemicals in cardiovascular health: The role of analytical chemistry (2000) American Heart Association - Industry Nutrition Advisory Panel, 14 September, Dallas.
- New anthropological discoveries about chocolate (2000) Chocolate Cravings: From Secret Indulgence to Good-For-You Pleasure, The Smithsonian Associates, 16 September, Washington, DC.
- Emerging research on antioxidants in cocoa (2001) Agroforestry Potential of Cocoa for Sustainable Development and Conservation, USAID Africa Bureau, 29 March, Washington, DC.
- Chocolate, flavonoids and your heart (2001) 55th Production Conference, Pennsylvania Manufacturing Confectioner's Association, 2 May, Hershey, Pennsylvania.
- Dietary flavanols: Their occurrence in foods and potential mechanisms of vascular action (2001) Flavanol-Rich Foods: A Strategy for Preventing Heart Disease? International Society for Heart Research, 2001 World Congress, July, Winnipeg, Canada.
- Flavanols and cardiovascular health: A mechanistic foundation. (2001) Let Food Be Thy Medicine: Medicinal Properties of Commonly Consumed Flavonoidcontaining Foods. American Dietetic Association Food and Nutrition Conference, 2001 Annual Meeting, October, Saint Louis, USA.
- Flavonoids: What they are and where you can find them. (2001) Flavanols and Cardiovascular Health: What is the Evidence for Chocolate and Red Wine? American Heart Association Satellite Symposium, Scientific Sessions Annual Meeting, November, Anaheim, USA.
- Delivering antioxidant benefits to the consumer: The role of food science (2001) A Scientific Perspective on Antioxidants for Sustaining Health, California Institute of Food and Agricultural Research Conference XV, December, Napa, California, USA.
- Lessons learned: Carotenoids and health (2002) Are Flavonoids Ready for a DRI? A Workshop hosted by USDA Western Human Nutrition Research Center/UC-Davis Nutrition Department, March, Davis, California, USA.
- Beyond antioxidant function: The role of chocolate flavanols in heart health (2002) 56<sup>th</sup> Production Conference, Pennsylvania Manufacturing Confectioner's Association, 2 May, Hershey, Pennsylvania.
- Dietary flavanols: What are they and where are they found? (2002) Chocolate and wine for the heart? The science behind dietary flavanols and cardiovascular health. American Heart Association Special Symposium XI, Scientific Sessions Annual Meeting, November, Chicago, USA.

- Academic lectures for class on "Nutrition Policy and Health Claims" (Professor James Tillotson), Tufts School of Nutrition, Boston, 2001 – 2004.
- Theobroma cacao: A surprising source of natural products having vascular activity (2003) Fogarty International Center/National Institutes of Health, December, Washington, DC, USA.
- Theobroma cacao: A surprising source of natural products having vascular activity (2004) Toyama Medical and Pharmaceutical University, January, Toyama, Japan.
- Dietary flavanols: Their chemistry and occurrence in foods and beverages (2004) Theobroma cacao: Ancient crop, medicinal plant, surprising future. The National Academies, February, Washington, DC, USA.
- Functional foods that promote health (2004) United States Department of Agriculture Outlook Forum 2004, February, Washington, DC, USA.

#### **Patents**

- Schmitz HH, Michael DL, Neumann JC, Webster MW, Zemenek E and Jerome R (1997) Health food product and its uses. United States Patent Number 5,643,623.
- Schmitz HH, Michael DL, Neumann, JC, Webster MW, Zemenek E and Jerome R (1998) Method of making a health food product containing antioxidants. United States Patent Number 5,834,044.
- Schmitz HH amd Romancczyck LJ (2001) Method for reducing postprandial oxidative stress using cocoa procyanidins. United States Patent Number 6,207,702.
- Kealey et al. (2001) Cocoa components, edible products having enriched polyphenol content, methods of making same and medical uses. United States Patent Number 6,312,753.
- Romanczyk LJ and Schmitz HH (2002) Use of procyanidins in the maintenance of vascular health and modulation of the inflammatory response. United States Patent Number 6,469,053.
- Schmitz HH (2003) Use of cocoa procyanidins combined with acetylsalicylic acid as an anti-platelet therapy. United States Patent Number 6,524,630.
- Schmitz HH, Chevaux KA, Dombrowski A and Jerome R (2003) Compositions for improving vascular health. United States Patent Number 6,610,320.

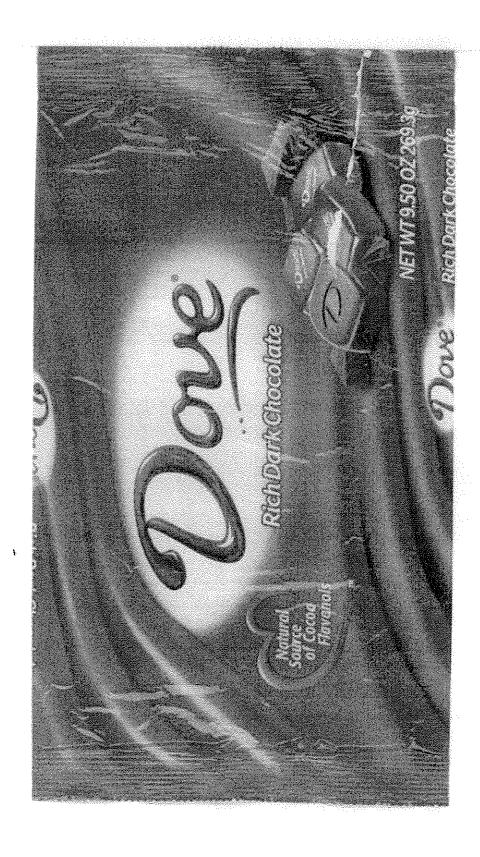
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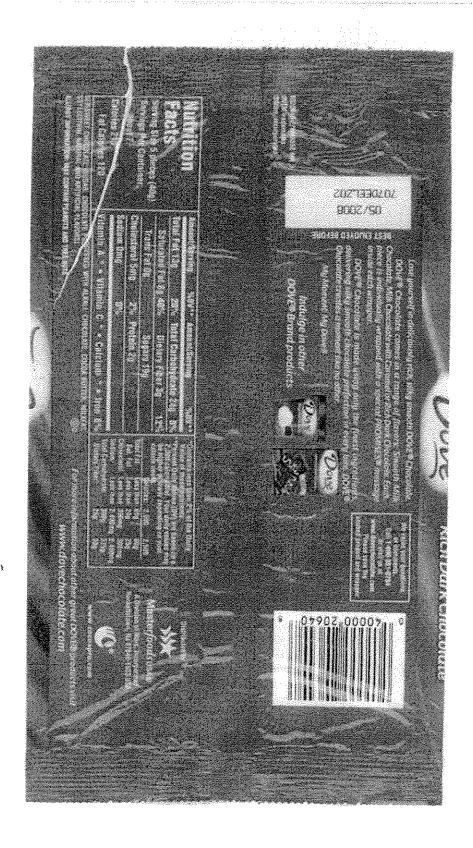
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## Exhibit 2





# Exhibit 3



