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Natural Vitamin D2 in Whole Food Extends Biologic Life

Single Nutrients Not As Effective As Whole Foods

STEVENSON, Wash.--([BUSINESS WIRE](#))-- [Total Nutraceutical Solutions, Inc.](#) (TNS) (OTCBB:[TNUS](#)), announced today that it has completed a research study comparing the therapeutic effect of single nutrient forms of synthetic Vitamin D3 and D2 versus natural Vitamin D2 within a whole food. The study focused on the control of Paraquat induced oxidative stress/biologic death. Paraquat is a very potent oxidative stress inducing chemical and causes death in animals and plants by the toxicity of released free radicals. Highly significant results showed that Vitamin D2, produced naturally by mushrooms, was active only when present within the parent whole food; Vitamin D2 and Vitamin D3 by themselves had no beneficial effect.

Oxidative or inflammatory stress is caused by the release of free radicals or reactive oxygen species (ROS) within cells and tissues of the body. Healthy cells and tissues normally neutralize ROS in order to stay alive. When production of ROS overwhelms the body's normal defense mechanisms, oxidative damage to cellular DNA occurs and can lead to cell death. Research indicates a strong link between oxidative stress, release of ROS and inflammation and disease, examples being [diabetes](#), heart disease, arthritis, [fibromyalgia](#), Alzheimer's disease, [cancer](#) and even early aging.

Oxidative or inflammatory stress was dramatically induced in the Drosophila fruit fly model by the toxic agent, Paraquat, and the end-point of death was evaluated. This model is a very well established paradigm to evaluate oxidative stress. The proprietary formula consisted of the organic edible mushroom Agaricus blazei Murill (AbM) produced by Sylvan Bio, Inc. that was stimulated with Ultraviolet-B light to produce a specific amount of increased natural Vitamin D2. This TNS investigator double-blinded study conducted in collaboration with Model Biosystems Inc, a California-based biotech company, showed that AbM with D2 was able to counteract and/or neutralize the oxidative stress effect and resulted in a 30% increase in survival. Also intriguing was the finding that pure Vitamin D2 and Vitamin D3 by itself had no effect on survival.

TNS has licensed from The Penn State Research Foundation the technology used to stimulate increased levels of Vitamin D2 within mushrooms, such as AbM. The patent, "Methods and Compositions For Improving The Nutritional Content of Mushrooms and Fungi," was published in the United States on October 29, 2009 and has an initial filing date of April 23, 2008.

"The synergistic relationship between whole complex foods and contained vitamins is most exciting," stated Marvin S. Hausman MD, CEO, TNS. "The company is actively developing Vitamin D2 enhanced food products that will allow people to maintain normal levels of this most important vitamin."

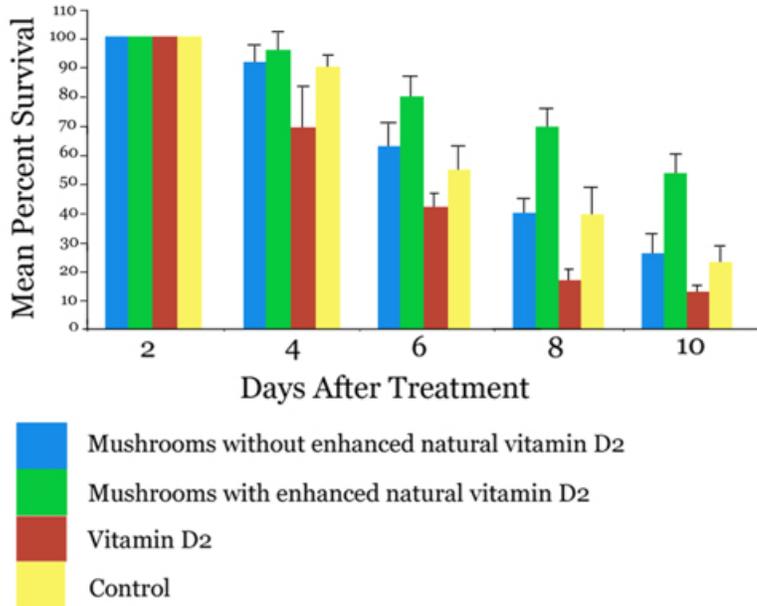
About Total Nutraceutical Solutions, Inc.:

Total Nutraceutical Solutions, Inc., a global leader in mushroom research and development, focuses on discovering, formulating and marketing products composed primarily of organic natural whole mushroom foods, containing bioactive nutrients, such as L-Ergothioneine and Vitamin D, with potential health benefits. Our scientific strategy is to specialize in the development of production and analytic technologies for food and nutritional supplements mainly composed of mushrooms and their mycelial biomasses. Novel clinical models and biomarkers are used to show nutritional and clinical efficacy of our products. In addition to our novel preventative healthcare formulations and nutritional approaches for a wide variety of human conditions and illnesses, we are also involved in the development, acquisition and ownership of breakthrough nutritional tools and products in the fields of animal husbandry and livestock feeds.

Any statements contained in this press release that relate to future plans, events or performance are forward-looking statements that involve risks and uncertainties, including, but not limited to, the risks associated with the transaction described in this press release, and other risks identified in the filings by Total Nutraceutical Solutions (TNS), Inc., with the Securities and Exchange Commission. Further information on risks faced by TNS are detailed in the Form 10-K for the year ended December 31, 2009, and in its subsequent Quarterly Reports on Form 10-Q. These filings are or will become available on a website maintained by the Securities and Exchange Commission at <http://www.sec.gov>. The information contained in this press release is accurate as of the date indicated. Actual results, events or performance may differ materially. TNS does not undertake any obligation to publicly release the result of any revision to these forward-looking statements that may be made to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.

Prevention of Paraquat-induced oxidative stress/biologic death by mushrooms with natural Vitamin D2

Paraquat is a very potent oxidative stress inducing chemical and casuses death



Vitamin D3 does not prevent Paraquat-induced oxidative stress/biologic death

