

## Phytonutrients to Phytopharmaceuticals: An Eventful Journey

Message from Dr. Muhammed Majeed, Founder & Chairman

Sabinsa Corporation turning twenty in 2008, remains committed to its founding principles of “Innovating for the Future from the Past”. Over the years we adapted phytonutrients with a history of food and medicinal use to applications in dietary supplements, functional foods and cosmetics, for preventive health maintenance.

With our expertise in phytochemistry, medicinal chemistry and organic synthesis, we embarked on developing innovative molecules and compositions from nature, for use as therapeutics in the treatment of chronic disease conditions

A milestone in Sabinsa Corporation’s pioneering efforts in the field of phytonutrients for health and well being, was achieved in 2006, with the approval of OcuFors, a branded and patented composition of forskolin eye drops as a natural drug for the management of glaucoma, by the Drugs Control General of India.

Forskolin is the active ingredient in ForsLean, Sabinsa’s award winning, and patented, standardized natural extract, used in dietary supplements for weight management support. ForsLean efficiently and safely enhances lean body mass at the expense of body fat, improving body composition, and body mass index (BMI).

The major stumbling block in the commercialization of forskolin as an ophthalmic drug has been its poor water

solubility. For example, the forskolin eye drops used in clinical trials by Hoescht Pharmaceuticals was a suspension of varying concentration of forskolin which induced side effects like reddening, itching, lacrimation and an initial increase in intraocular pressure (IOP). Currently available therapeutics for the management of glaucoma (a leading cause of blindness globally), offer benefits, but are associated with side effects and tolerance development. Research efforts by Sabinsa Corporation enabled preparing aqueous solutions of diterpenes such as Forskolin and its derivatives, using suitably substituted cyclodextrins as solubilizing agents improving the water solubility of forskolin 6,000 fold (US Patent #6,960,300).

The composition effectively addresses formulation challenges that have limited the use of forskolin as a therapeutic, functional food, or cosmetic active agent in the past. Aqueous preparations of forskolin and related diterpenes are preferable in dermatological, gynecological, otological, rhinological and in mucous membrane applications, and especially useful in ophthalmic preparations for the management of ocular hypertension and glaucoma. The soluble forskolin composition is potentially a first-line natural therapy in reducing IOP, based on its safety in terms of side effect profile, and its efficacy in lowering IOP. Drug



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registration efforts are underway globally.

In 1994, Sabinsa Corporation introduced and patented BioPerine<sup>®</sup>, (black pepper fruit extract) for use as a bioavailability enhancer for nutrients. Tetrahydropiperine, derived from this extract, improves the uptake and utilization of topically applied active molecules, and received the Thomas Alva Edison patent award in 2005. This invention is relevant to cosmetics, as well as dermatological compositions, and topical drug delivery, wherein it reduces dose requirements of potentially toxic actives, in the treatment of chronic disease conditions.

Sabinsa Corporation is now developing natural molecules and compositions for the treatment of socially debilitating conditions such as psoriasis, and precancerous conditions such as oral leukoplakia. We hope to obtain drug approval for the patents pending psoriasis treatment composition in 2008.

As always, we remain caring and committed to the spirit of innovation in healthcare, and will continue to provide the quality ingredients that you have come to expect from SABINSA, this year and in the years to come.

## Sabinsa Hires Jeff Lind As Chief Executive Officer

**S**abinsa Corporation has announced the appointment of Jeff Lind as the company's chief executive officer, overseeing all operational aspects including supply chain and purchasing management, as well as financial expenditures. As a key member of Sabinsa's leadership team, Lind will help to develop strategic direction and determine optimal business practices for the company.

With a successful executive track record and comprehensive expertise in the nutraceutical industry, Lind's more than 17 years of business experience includes leadership roles in sales and marketing, corporate finance, supply chain and risk management. Most



recently, he served as the director of marketing and sales for a leading nutritional company, further cementing his vast experience in the industry's retail and manufacturing sector. Lind holds a J.D. degree from Western New England College School of Law and has previously practiced taxation and general corporate law.

"We are excited to have Mr. Lind join our team of professionals," said Muhammed Majeed, Ph.D. and founder of Sabinsa Corporation. "As CEO, Jeff brings rich experience and expertise that will be a tremendous asset as the company begins a phase of substantial growth to meet the future needs of the industry."

## Jim Cudahy joins Sabinsa Corporation as President and COO

**J**im Cudahy graduated from Manhattan College with a B.S. in Chemical Engineering. Jim has over 26 years of experience in the CPG industry, including two Fortune 100 companies (Kraft and Kellogg), focused on food and dietary supplements (Nellson Nutraceuticals). With his strong experiences in manufacturing, supply chain, quality, engineering, contract manufacturing and sales, Jim will provide Sabinsa with a comprehensive business experience base upon which we will move into the future.



# Sabinsa Announces Capability as Full-Service Contract Manufacturer

## Utah Site Provides Complete Range of Manufacturing Services in Addition to Raw Material Offerings

Sabinsa Corporation's Payson, Utah contract manufacturing facility is now fully operational. The additional 17,000-square-foot center provides cutting-edge capabilities for the development of capsules, tablets, bulk custom pre-mixes, drum-to-hopper blends, stick packs, and powdered drinks.

Sabinsa's contract manufacturing services include:

- ✓ Blending – 10,000 kg/shift
- ✓ Roll compaction – 1,400 kg/shift
- ✓ Fluid-bed granulation – 3,500 kg/shift
- ✓ High sheer granulation – 1,400 kg/shift
- ✓ Comill particle size reduction – 5,000 kg/shift
- ✓ Tablet compression – 1 MM tabs/shift
- ✓ Tablet coating – 250 kg/shift
- ✓ Encapsulation – 1.2 MM caps/shift
- ✓ Stick Packs – 1.2 MM/shift

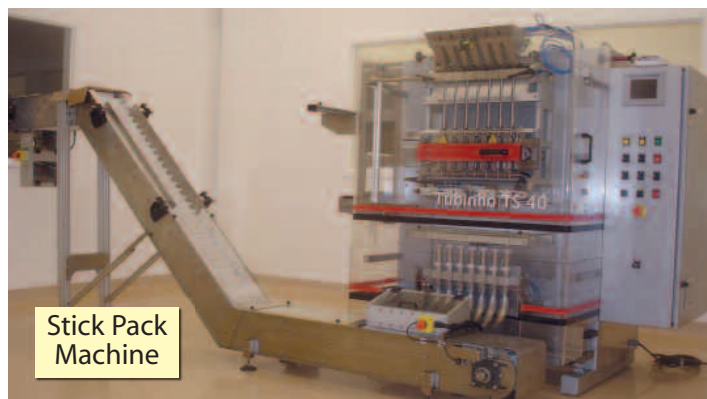
“As a proven supplier of quality raw materials for nearly two decades, we felt it a natural transition to extend our offerings to include state-of-the-art manufacturing services,” said Muhammed Majeed, Ph.D., founder and CEO of Sabinsa Corporation. “Now, our customers not only have access to our scientifically-backed raw materials offerings, but also to value-added manufacturing capabilities that meet all of their

formulation needs. This provides finished goods manufacturers with added convenience, substantial cost savings and a decreased time to market for products.”

Additionally, Sabinsa is working to secure Australian TGA and other international regulatory certifications for this facility to better serve its domestic clients with international distribution, as well as international clients presently serviced through other Sabinsa offices globally.

Sabinsa's global network of scientists, expertise in the development of custom extracts and ingredients, and ability to provide resources from product inception to completion results in unparalleled service to its quality-oriented customers.

For more information visit [www.sabinsa.com/manufacturing](http://www.sabinsa.com/manufacturing).



# Sabinsa Corporation Awarded GRAS Status for Selenium Select®

**Bioavailable and Safe Selenium Ingredient  
Confirmed Safe for Use in Foods and Beverages**

**Selenium SeLECT®**  
An ingredient of Sabinsa Corporation

Sabinsa Corporation announced Selenium SeLECT®, the company's branded L-(+)-Selenomethionine compound and the most bioavailable, pure and safe form of selenium, received GRAS (Generally Recognized As Safe) designation after an intensive review of safety and toxicology data by an independent panel of respected scientists assembled by Soni & Associates, Inc. This GRAS status allows for Selenium SeLECT to be used in a variety of food and beverage applications including yogurt, flavored milk, pudding, bread, cookies, pasta, cereal, oils, candies, water, beverages, tea, herbs and other natural blends.

“As consumers continue to embrace functional foods and beverages as a major component of a healthy lifestyle, manufacturers are searching for safe and efficacious ingredients to improve the nutritional profile of their finished products,” stated Muhammed Majeed, Ph.D., Managing Director and CEO, Sabinsa Corporation. “Given the increasing number of ineffective and sometimes dangerous products on the market today, the proven safety and efficacy of Selenium SeLECT, as exemplified by its clinical research and GRAS status, makes it ideal for inclusion in a full-array of food and beverage offerings.”

Selenium is a trace mineral that is found naturally in soil and has been shown to have several positive health benefits. When consumed, selenium enters the body to form selenoproteins and glutathione, the body's antioxidant

immune system detoxifier. Selenium SeLECT's superior quality as a selenium ingredient is additionally supported by the following:

- The worldwide quality standard or United States Pharmacopeia (USP) monograph for selenomethionine is based on Selenium SeLECT
- Selenium SeLECT is registered and approved by the European Union as a safe form of selenium supplementation
- The National Cancer Institute (NCI) is using Selenium SeLECT for its Selenium and Vitamin E Cancer Prevention Trial (SELECT), a 12-year study focused on the role of selenium and vitamin E, both separately and together, in the prevention of prostate cancer. Additionally, NCI is conducting the Prevention of Alzheimer's by Selenium SeLECT and Vitamin E (PREADVISE) trial, researching the role of selenium and vitamin E in preventing memory damage with age, including Alzheimer's and other diseases that can affect the brain. Selenium SeLECT was chosen for these NCI studies because of its high quality.
- Selenium SeLECT has been certified by NSF International
- Selenium SeLECT is manufactured at Sabinsa's state-of-the-art facility in India

For more information visit [www.seleniumselect.com](http://www.seleniumselect.com).

## Sabinsa's Manufacturing Facilities Receive Funding, Recognition From Government of India

**Grant Aids Sami Labs to Complete Two Novel Research Projects**

Sabinsa Corporation announced that Sami Labs, its research and manufacturing arm in Bangalore, India, received funding from the Government of India's Department of Scientific and Industrial Research (DSIR) to perform pilot trials on two novel research projects.

Sami Labs was awarded \$185,000 under the Department's Technology Development and Demonstration Programme, designed to help promote India's research, development and technology advancements. The grant will be used in part to develop and test a plant-derived cosmetic

active, with expected market availability in late 2008. In addition, the grant will assist Sami Labs in developing a novel method to manufacture Resveratrol utilizing Sami Labs' patented synthetic Demethylation strategy.

Additionally, India's National Accreditation Board for Testing & Calibration Laboratories successfully audited Sami Labs research & development and quality control labs. The accreditation certificate provides further validation of Sami Labs' equipment, analytical methods, data systems and regulation compliance.

## PATENT NEWS:

## SABINSA SECURES PATENT FOR FORSLEAN® IN CANADA

Sabinsa has secured a patent in Canada for its branded ingredient ForsLean®, a standardized extract of *Coleus forskohlii* roots, the only known plant source of forskolin, a natural compound that has been shown to increase lean body mass and help optimize body composition through cAMP activation. Patent #2281562 protects the use and preparation of *Coleus forskohlii* extract and affirms that ForsLean is the only such extract that can legally be used in nutritional supplements for the purpose of increasing lean body mass in Canada.

## SABINSA SECURES U.S. PATENT FOR COCOCIN™ INGREDIENT

Sabinsa has secured a U.S. patent for its branded ingredient Cococin™, a freeze-dried powder form of green coconut water. In addition to Sabinsa's derivation process, U.S. patent #7,300,682 secures exclusive rights to the resulting vitamin-rich composition and its intended uses in cosmetics, supplements and foods and beverages to support healthy cell growth and improve overall dermal health, among others.

Sabinsa's process extracts green coconut water, a liquid endosperm of maturing coconut, at optimal maturity when high levels of RNA, critical for amino acid transport and respiratory metabolism of living cells, are present. Long considered a refreshing beverage and even a natural sports drink in Southeast Asia, Central America and other tropical regions, green coconut water has been valued for its regenerative benefits.

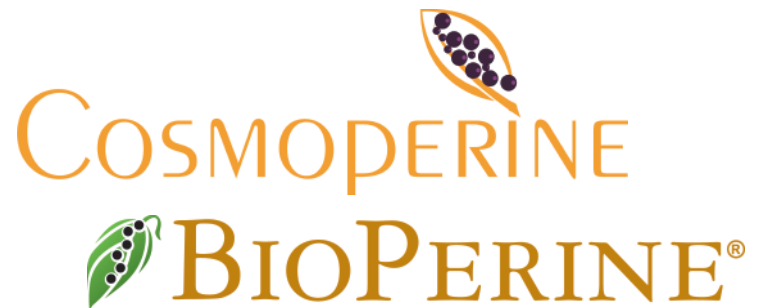
In addition to Cococin's U.S. protection, the branded ingredient was also granted European Patent #EP1341547 for process, composition and use in the European Market.

## SABINSA JAPAN SECURES TWO NEW PATENTS: BIOPERINE® &amp; COSMOPERINE®

Sabinsa Corporation has secured patents in Japan for its branded ingredients BioPerine® and Cosmoperine®, standardized piperine compositions derived from black pepper extract.

Patent # JP 3953513 protects the use of piperine in increasing the bioavailability of the nutrients and pharmaceuticals. It affirms that BioPerine® is the only black pepper extract that can legally be used in nutritional supplements for the purpose of enhancing the bioavailability of nutrients in Japan.

Patent # JP 4098985 protects the use of tetrahydropiperine obtained from black pepper using proprietary process. When included in formulations with other biological actives, it enhances their bioavailability and utilization.



## OTHER NEWS: Evonik Extends Partnership with Sabinsa

Evonik Industries and Sabinsa have elevated their exclusive marketing partnership with the Personal Care product line of Evonik on a new level. Evonik will now offer two more specialized, standardized botanical actives and extracts from Sabinsa, all specifically developed for cosmeceutical use, to the personal care industry worldwide. Evonik will introduce a standardized extract derived from the seeds of the Horse Chestnut tree for the cosmetic market. Horse chestnut extract is clinically proven to benefit people suffering for example from

varicose or spider veins. The second "new entry" is Xymenynic Acid, obtained from *Santalum album* seeds. The standardized powder extract adds an anti-inflammatory effect to personal care products. These products are produced at Sami Labs Ltd., Sabinsa's national award-winning research & manufacturing facilities in Bangalore, India and have been tested for safety and efficacy in their biological research laboratory by advanced in vitro systems i.e., cell lines and bioassays.

# Study Confirms Sabinsa's LeanGard® Effectively Boosts Weight Loss and Cuts Body Fat

Results of a randomized, double-blind, placebo-controlled study of 46 overweight men and women revealed that participants receiving LeanGard®—a proprietary blend of three of Sabinsa's patented, clinically researched ingredients, ForsLean®, Garcitrin® and BioPerine®—had greater overall weight loss and reduction in body fat, as well as significant increases in lean body mass, than the placebo group.

The 12-week study, which was conducted at the Shifaa Hospital in Bangalore, India, evaluated the efficacy and safety of LeanGard as a dietary intervention for weight management support against a neutral placebo. Study participants were given either 500 mg of LeanGard or a placebo twice daily and screening visits were conducted on day zero, as well as at weeks three, six, nine and 12, to measure Total Body Water (TBW), Basal Metabolic Rate (BMR), Body Mass Index (BMI), Waist to Hip Ratio (WHR), Body Fat Percentage (BF%) and Lean Body Mass (LBM). Nineteen of the 21 LeanGard receiving participants achieved more than a 5 percent reduction in body weight at the end of 12 weeks. Additionally, the LeanGard group showed a mean reduction in BMI of 7.45 percent from the baseline compared to 1.09 percent for the placebo group, as well as a decrease in body fat of 8.15 percent compared to 1.18 percent for the placebo group. A 4.36 percent increase in lean body mass was also seen in the LeanGard group versus a 0.67 percent increase from baseline in the placebo group. No

clinically significant changes were observed in blood pressure or heart rate, hematological liver function, renal function, thyroid function, plasma lipid levels or other biochemical parameters.

“With nearly two-thirds of the world's population overweight, the need for effective products with extensive scientific validation is more important than ever,” noted Dr. Lakshmi Prakash, vice president of innovation and business development, Sabinsa Corporation. “These study results indicate that LeanGard helps improve body composition and mitigate weight gain in overweight men and women with no apparent side effects.”

LeanGard consists of a proprietary ratio of ForsLean, Garcitrin and BioPerine. ForsLean is an extract derived from *Coleus forskohlii* roots, and the only known plant source of forskolin, a natural compound that has been shown to increase lean body mass and help optimize body composition through cAMP activation. Garcitrin is a composition of calcium salt hydroxycitric acid (HCA) with garcinol, a polyisoprenylated benzophenone isolated from *Garcinia cambogia* and *Garcinia indica* fruits, which reduces fatty acid and lipid synthesis and improves lean body mass. BioPerine is a standardized piperine composition derived from black pepper extract that has been shown to increase the absorption of nutrients in nutritional supplement formulations. All ingredients listed above are patented by Sabinsa for their use.

## OTHER NEWS: Sabinsa Welcomes Benoit Le Gall as Quality Assurance and Quality Control Manager

Sabinsa Corporation announces the appointment of Benoit Le Gall, Ph.D. as quality assurance and quality control manager for its Payson, Utah facility. Le Gall will be responsible for upholding TGA certifications, maintaining FDA cGMP compliance and managing laboratories, air handling, water purification systems

and other quality system requirements. Le Gall comes to Sabinsa with over eight years of experience as a chemist with a strong background in quality control and laboratory practices. His management background includes a master of business administration from the Paris Graduate School of Management.



# Cosmetic Corner:

## New cosmeceutical product launches from Sabinsa

### **MONOLAURIN**

Monolaurin is a wide spectrum anti-viral, anti-fungal and anti-bacterial ingredient.

Monolaurin is the glycerol ester of lauric acid, a 12-carbon chain fatty acid found naturally in breast milk and certain vegetable oils like coconut oil. Monolaurin lends itself useful in formulations requiring antimicrobial activity. It has an MIC of 40/ml i.e., at 0.004% as such against p. acnes and hence useful in anti-acne preparations. It also has a potential role as component of a natural preservative blend. Being a non-ionic surfactant, it can also be used in anti-microbial soaps and shampoos.

### **GLYCYRRHIZINIC ACID & MONOAMMONIUM GLYCYRRHIZINIC ACID**

Glycyrrhizin, glycyrrhizinic acid or glycyrrhizic acid, is the active principle of licorice root. It is a powerful sweetener, 30–50 times as potent as sucrose. Monoammonium Glycyrrhizinic acid (MAG) is the water soluble delivery form of Glycyrrhizinic acid. It is used as an anti-inflammatory and anti-allergic remedy for the treatment of bronchial asthma and other diseases. It finds applications as a flavor enhancer and flavoring agents in various food categories. Topically, MAG can be used in the form of creams or water based gels in the management of eczema and other skin disorders.

### **OXYRESVENOX™**

OxyResvenox™ is the registered trade mark of Oxyresveratrol from Sabinsa. Oxyresveratrol is an analog of Resveratrol and is of synthetic origin. US Patent 7,253,324, granted to Sabinsa specifically protects the process for the synthesis of biologically active polyphenolic compounds like Pterostilbene, Resveratrol and Oxyresveratrol by novel dealkylation. OxyResvenox finds potential applications as an anti-tyrosinase, anti-oxidant and anti-inflammatory ingredient. In view of skin lightening, de-pigmentation and anti-inflammatory potential it can also be used in cosmetic formulations as an anti-aging ingredient.



## Introducing Natural Colors from Sabinsa for Nutraceutical and Cosmeceutical Applications

### 1) Red Sandalwood (*Pterocarpus santalinus*)

#### **Cosmeceutical Applications**

- To impart glow and shine to the skin in cosmetic creams, gels, lipsticks and lotions
- To help wound healing

#### **Nutraceutical Applications**

- Add color and nutrient value to processed food beverages, candies etc.,
- Impart red color to alcoholic beverages

### 2) Sappanwood (*Caesalpinia sappan*)

#### **Cosmeceutical Applications**

- Sappanwood Extract can be incorporated into cosmetic creams, gels and lotions
- Its antibacterial property can be utilized effectively in aftershave lotions
- It can give bright color and add aesthetic value to bath soaps

#### **Nutraceutical Applications**

- Add color and nutritional value to citrus drinks
- Impart color to alcoholic beverages
- Add nutrient value and aesthetic appeal to processed foods

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