



The Pollen Press

Corporate Office
95 Midland Rd
Saginaw, MI 48638
(989) 797-5502

Manufacturing Facility
2-300 Co Road C
Deshler, Ohio 43516
(419) 278-1023

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UPCOMING EVENTS:

Vitafoods South
America
March 28th-29th
Sao Paulo, Brazil
Booth # 156

SupplySide Market-
Place
May 8th-10th
New York City, NY
Booth # 427

Packaging Line Upgrades



Graminex has recently purchased two new upgrades for our bottling line in order to increase production speeds and the overall efficiency. The first piece of equipment that was purchased was a new shrink packaging tunnel to add onto the end of the packaging line. This unit is a Conflex® FUSION model that will allow for many different shrink packaging options. Not only will this machine help reduce the amount of time and material it takes to shrink-wrap individual packages, but it will also reduce the amount of handling required for each product. The machine will take all different sized products and shrink-wrapping materials.

The second piece of equipment that was purchased was an upgraded laser printer, a VideoJet 3120. This laser is used for printing the batch and date stamps on our outer cartons for some customers' products. The newer model allowed us to increase our production line speeds.

With these two upgrades we have been able to increase our packaging line production speeds by over 20%. It has also reduced the product handling times. As our packaging line becomes more sophisticated, Graminex is able to offer competitive pricing for packaging that we were previously unable to offer.



**Above: Conflex® FU-
SION Shrink tunnel
with auto load belt**

**Left: VideoJet 3120 with
touch screen**

Pangenine® Li6: A Cosmetic Raw Ingredient

Skin building blocks... and the energy to build them!

Skin cells are just like us: they are active when young, but this activity tends to decrease with aging processes. Their energy consumption decreases as a result. A skin cell's main source of energy is produced in the mitochondrion, a cellular organelle that interacts in metabolism regulation and cell death pathways. All mitochondria are not equivalent, as some of them are found in an activated state, while others are inactive. Their capacity to support the cell reactions energetically is affected by the changes of activity. A higher rate of activated mitochondria transfers its energy in an active

cell or tissue that is working to replace cell components or synthesize new ones.

PANGENINE® Li6 is a water-soluble fraction of a rye pollen extract, rich in essential amino acids and is able to nourish the skin with these indispensable building-blocks that are not synthesized by our body. This source of essential compounds would be totally useless to the skin if they were not complemented with a source of energy to sustain the cell assembly processes. In fact, an active cell is usually characterized with high energy consumption that is

linked to physiological processes such as protein synthesis.

Skin cells can be evaluated for their activity potential through the characterization of active mitochondria. In this case, a specific marker is used (the JC-1 fluorescent dye), that emits a different color in regards to the state of polarization (activity) of the tested mitochondrion. In the image below, we can observe the transition from many inactive depolarized mitochondria (in green) to active polarized mitochondria (in red).

Photo 1 - Transition from inactive to active mitochondria in a cell culture.

Image 1: depolarized mitochondria

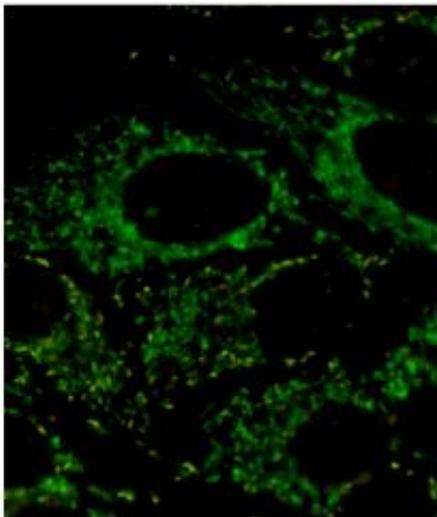


Image 2: mitochondria whose membrane potential is going towards higher values

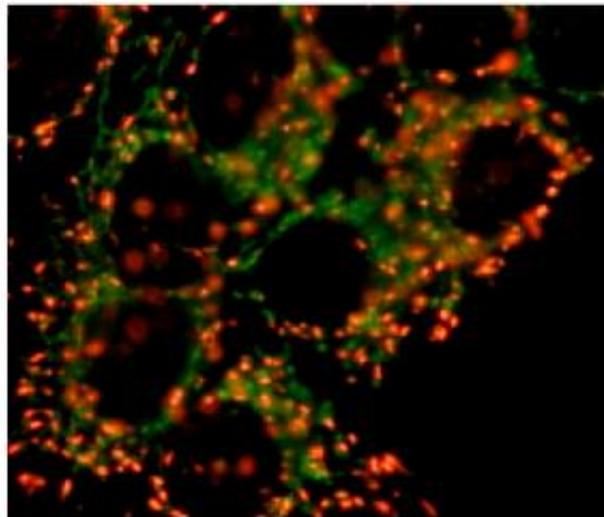
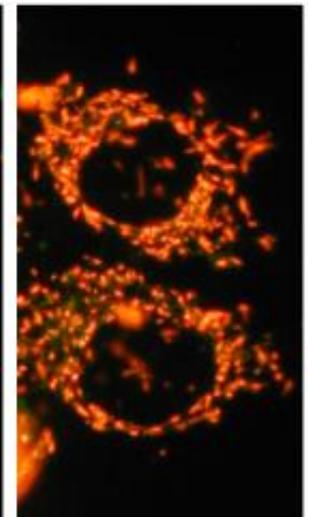


Image 3: mitochondria with normal membrane potential



Test results:

A test was conducted using PANGENINE® Li6 versus a control to demonstrate mitochondrion activity. The data reported in Table 1 refer to the number of registered cells (human fibroblasts) that express a red fluorescence or activated status for both cases (treated and control), on a total of 35,000 analyzed cells per culture.

The data reported in Table 2 refer to the augmentation of active mitochondria in treated cells (human fibroblasts) versus control, on a total of 35,000 analyzed cells per culture.

This test allows for an indirect measure of the production of energy in skin cells. The performance of PANGENINE® Li6 in this in-vitro test was demonstrated to be very high, showing a stimulated metabolism. This stimulation is characteristic of working cells that differ from cells with basal status.

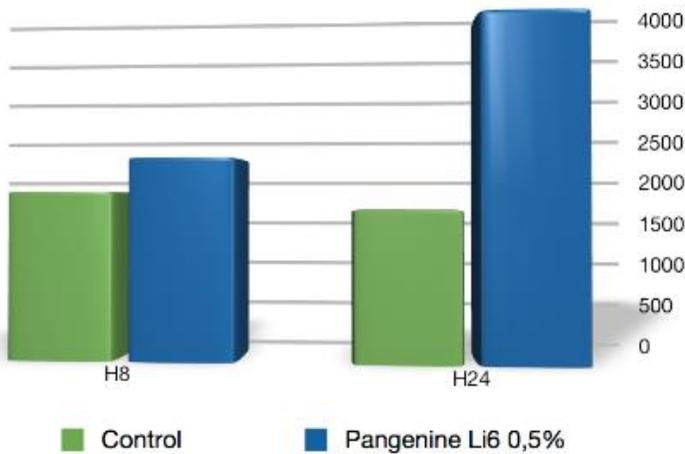
Table 1 - Number of fibroblasts showing activated mitochondria

	After 8 hours of treatment	After 24 hours of treatment
Non-treated control culture	1879	1669
PANGENINE® Li6 (0,5%)	2254	3836

Table 2 - Stimulation of activated mitochondria in treated fibroblasts versus control

	After 8 hours of treatment	After 24 hours of treatment
PANGENINE® Li6 (0,5%)	+20%	+130%

Activated mitochondria - Pangenine® Li6 vs. Control



Graphic 4 - Active mitochondria in treated cells versus control.

PANGENINE® Li6 is not only a source of building blocks to nourish aging cells, but also stimulates the energy necessary to the synthetic processes of re-activated skin cells. PANGENINE® Li6 is a uniquely complex and complete raw material for applications into cosmetic formulas. For more information about the raw material PANGENINE® Li6 please contact PRINCIPIUM or Graminex.



PRINCIPIUM S.A.
 Tel: (+41) 91 971 79 61
 E-mail: cosmetics@principium-bsi.com

Graminex LLC
 Tel: (989) 797-5502
 E-mail: sales@graminex.com

Wellness News: Calcium

Everyone knows that calcium is important for bone and teeth growth, but it also serves other purposes in the body as well. Calcium is involved in neurotransmitter releases, muscle contractions and blood clotting. The problem with 99% of the body's storage for calcium being in the teeth and bones, is when a human body experiences a lack of calcium these are the first places the body's systems go for their calcium needs. While it occurs periodically through out your life, continued 'borrowing' leads to many problems later on. The most common problem is osteoporosis. This occurs in older people where the bones become porous and brittle. So how does it all work?

During bone growth calcium that is taken in by the body is deposited into multiplying bone cells continually. It acts like a cement to hold the cells and components that make up our bone mass together. This process is accelerated during adolescent years, so naturally teens need the most calcium. Once the bones are fully developed the body's calcium consumption levels off. Throughout different stages in life the need may fluctuated due to many different factors. When pregnant or healing from bone injuries you may need elevated levels of calcium. Sometimes medications may also be responsible for a decrease in calcium absorption by the body, like antacids.

As far as muscles are concerned calcium plays an important role during muscle contractions. Muscles, including the heart muscle can cramp

and stop working. This is caused by a lack of calcium in the system controlling the different nerve impulses responsible for contractions. With lower levels of calcium present in the muscles you may begin to experience muscle spasms like twitching.

For your teeth calcium is a major concern for the formation of healthy enamel layers. This layer prevents them from getting tooth decay and other diseases. Calcium has also been shown to prevent gum disease from occurring.

So how do we get enough calcium? Well for starters you need to know how much you require per day based mainly on your age. According to the Food and Nutrition Board the Recommended Daily Allowances are:

- Toddlers (1-3 yrs old) - 700 milligrams
- Children (4-8 yrs old) - 1,000 milligrams
- Older children (9 yrs old and up to 18) - 1,300 milligrams
- Adults - 1,000 - 1,300 milligrams, depending on doctor's recommendation

Each glass of milk contains about 250 milligrams of calcium and is one of the easiest ways for children and adults to acquire the necessary amounts of calcium. If you are pregnant or suffering from some sort of bone disease often times a doctor will prescribe a calcium supplement. Your body is naturally designed to adjust to the levels of calcium you ingest through a hormone called parathyroid. If there is too

little this hormone will tell your body to borrow it from stores in your bones. If there is too much your intestine will stop or slow down the absorption process until it reaches the appropriate equilibrium.

Most forms of calcium are found in the foods we eat. One of the problems with calcium



found in food is that it degrades and disappears from foods that have been cooked too long, especially the calcium found in vegetables. When cooking vegetables rich in calcium, try to use as little water as possible to cook them with. Use a steamer rather than boiling water. Foods that are rich in calcium are yogurt, milk, cheese, tofu, salmon, sardines, spinach, broccoli, baked beans, rhubarb and almonds. Now many of the foods we buy at the supermarket have been fortified with calcium to assist in increasing our consumption. Talk to your doctor if you feel like your calcium intake is below what it should be. A change in diet or supplementation may be all you need.

Product Spotlight: PollenBerry™



PollenBerry™ is a new product containing Graminex G60™ Flower Pollen Extract and Cranberry Powder, available exclusively from Graminex for applications in the urinary tract health markets. It is available in a capsule form as well as in a bulk powder.

Each Capsule Contains:

Graminex G60 Flower Pollen Extract	42mg
Cranberry Powder	125mg

This product was recently developed using a specific cranberry powder that has been backed by numerous clinical studies for UTI applications. PollenBerry™ is an ideal health supplement for both men and women looking for overall urinary tract support, help with reoccurring urinary tract infections (UTIs) and help with lower urinary tract symptoms (LUTS). The combination of the two ingredients allows for a synergistic effect on the urinary tract for those who are especially prone to reoccurring UTIs.

UTIs are most commonly caused by the bacteria *Escherichia coli*. This bacteria often moves from the digestive tract into the urethra. This movement causes nearly 80% of all UTIs in adults. Symptoms can be both uncomfortable and debilitating, and may include pain or burning with urination, the urge to frequently urinate, tenderness or heaviness in the lower abdomen, cloudy or foul smelling urine, pain in the lower back, nausea and vomiting. Severe cases are treated with different types of antibiotics. In many patients however the continuing use of antibiotics may have many negative side effects.

PollenBerry™ is a natural supplement designed for men and women who are prone to having these symptoms associated with infections in the urinary tract. It may be taken daily to help prevent reoccurring UTIs and painful or irritating LUTS. PollenBerry™ is considered a safe supplement for men and women without the side effects associated with harsh and long-term antibiotic treatments.

Graminex G60™ is a clinical strength formulation of the standardized water soluble portion of Graminex Flower Pollen Extract™. This ingredient offers all the water soluble nutrients of the pollen extract in a higher concentration, which is standardized to contain not less than 6% amino acids in the finished raw material. G60™ provides each one of the common amino acids along with all 10 essential amino acids. The formulation also provides higher levels of antioxidants. Antioxidants are important in helping to eliminate damaging free radicals in the human body for healthy functioning systems. The level of antioxidants in a substance is calculated by performing an Oxygen Radical Absorbance Capacity Test, which gives you the ORAC value of a substance. The substances are then given a “score” to rank how well it can neutralize or destroy free radicals. G60™ received a score of 102, compared to blueberries at 32, spinach at 24 and lycopene at 58, as reported by the FDA.

Various clinical studies have been conducted using Flower Pollen Extract showing benefits specifically for those who suffer from LUTS. Two studies attribute this to the anti-inflammatory and alpha adrenergic blocking effects, both helping to reduce LUTS.^{1,2} Another study looked at the effects of pollen on the bladder and urethra contractions. In this study G60™ was able to reduce the contractions in the urethra allowing for easier urination.³ All of these studies show the ability of Flower Pollen Extract to improve overall urinary tract function by reducing inflammation and easing urination. G60™ is a beneficial ingredient for anyone seeking relief from reoccurring LUTS and UTIs without the side effects of antibiotic treatments.



Cranberry powder is also a source for highly potent antioxidants. Cranberries have been widely used for their natural ability to help prevent infections caused by bacterial

growth in the body. In addition to the high levels of overall antioxidants, cranberry powder also offers specific antioxidants called proanthocyanidins. Proanthocyanidins are a type of biologically active flavonoids and are one of the most potent antioxidants found in nature. The proanthocyanidins specific to cranberries have been shown to be beneficial against UTIs. The cranberry powder in PollenBerry™ Capsules is supported by clinical studies demonstrating support for urinary health and for reoccurring UTI prevention.

Clinical studies have shown that cranberry powder has been able to significantly reduce the occurrence of *E. coli* in the urinary tract.⁴ This is possible because of the anti-adhesion activity of the urine after consuming cranberry powder. This basically stops the *E. coli* or other UTI causing bacteria from adhering to the walls and lining of the urinary tract. In one study the anti-adhesion was shown to have a more prolonged effect when compared to drinking cranberry juice cocktail, with an increase in activity at 6 hours and again at 24 hours.⁵ Cranberry powder is more beneficial than just drinking cranberry juice cocktail, which loses its effect after 9 hours and is completely gone at 24 hours. Cranberry powder is a useful ingredient for both men and women who are prone to reoccurring UTIs.

While antibiotics remain the conventional therapy technique for UTIs, PollenBerry™ Capsules, containing both Graminex G60™ Flower Pollen Extract and cranberry powder, may be considered beneficial for those looking for natural continued support without side effects.

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2. Preuss, H., Bagchi, D., Chambliss, W. 2003. A Critical Review of Cernitin™ for Symptomatic Relief of Lower Urinary Tract Symptoms (LUTS) in Men. Res Comm Pharmacol Toxicol.

3. Kimura, M. Kimura, I., Nakase, K., Sonobe, T., Mori, N. 1986. Micturition activity of pollen extract: contractile effects on bladder and inhibitory effects on urethral smooth muscle of mouse and pig. *Planta Med.* 52(2): 148-51.

4. Sengupta, K., Alluri, K., Golakoti, T., Gottumukkala, G., Raavi, J., Kotchrlakota, L., Sigalan, S., Dey, D., Ghosh, S. Chatterjee, A. A randomized, double blind, controlled, dose dependant clinical trial to evaluate the efficacy of a proanthocyanidin standardized whole cranberry (*Vaccinium macrocarpon*) powder on infections of the urinary tract.

5. Howell, A. 2009. Bacterial anti-adhesion activity of human urine following 27% cranberry juice cocktail vs. PACran Capsule consumption. Rutgers University.