

Scientific Affairs

# ALOECORP



## Grand Opening

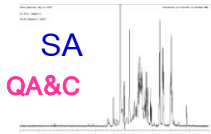
Sept. 11 - 15, 2005 – Texas, Mexico

Qmatrix™ Proprietary Processing



**ACTIV**aloe





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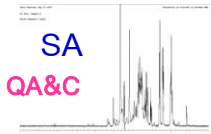
# ALOE CORP



## Qmatrix™ Proprietary Processing

- What is Qmatrix™?
- MAP Processing
- LTST dehydration technology
- Product Quality Advances
- Value Added products





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## The ECONET:

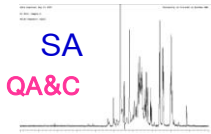
A Corporate Culture that incorporates the Ideologies and Practices of its Members, Uniting them and their Knowledge.

*“A community where all can share purpose, dreams & happiness together”*

Unigen East - Univera West – Namyang – Namyang Aloe – Aloecorp US & Mexico – Unigen East – Unigen West – Oasis Life Sciences – Hainan Aloecorp – Hainan Namyang – Unigen Russia – Univera Russia

*“Bringing the Best of Nature to Mankind”*





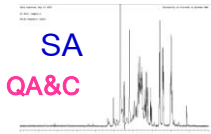
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*“Bringing the Best of Nature to Mankind”*

- Aloecorp’s new Qmatrix™ Proprietary Processing is the latest step in our efforts to fulfill our company’s mission of *“bringing the best of nature to mankind”*.
- Qmatrix™ Proprietary Processing is a multiphase project consisting of technological innovation and processing upgrades.
- Phase I is complete and we are in the strategic planning stage of Phase II.
- As the world leader in quality aloe processing our dedication to improving the quality and efficacy of aloe is never-ending.





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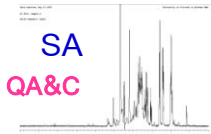
ALOE CORP ECONET

## Qmatrix™ Proprietary Processing

Qmatrix™ is a proprietary aloe manufacturing process. It is the combination of our patented Modified Aloe Polysaccharide (MAP) process and proprietary, patent pending Low Temperature/Short Time (LTST) drying process.

- MAP... Aloe polysaccharides, the best studied and most widely recognized bioactive component are modified by an enzymatic method to meet a molecular weight distribution shown to enhance bioactivity.
- LTST... A patented dehydration technology that preserves heat labile components and superior sensory attributes compared with other available technologies. Aloecorp's Proprietary Manufacturing Process.
- Qmatrix™ PP... Designed to produce the highest quality *Aloe vera*.
- Providing Versatility... solubility, bulk density and  $q_m$  Solutions™





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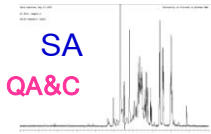
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## *Our History*

### Development of the **MAP** process...

At Unigen Pharmaceuticals we investigated the role that molecular weight played in the biological activity of aloe polysaccharides in order to develop a processing method that would retain and enhance the biological activity of native aloe... resulting in the patented processing method now used exclusively by Aloecorp.





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## Results of this study show that **MAP**

- Activates macrophage
- Restores effector cell function in DTH model
- Promotes fibroblast cell proliferation
- Promotes healing of UVB induced skin lesions

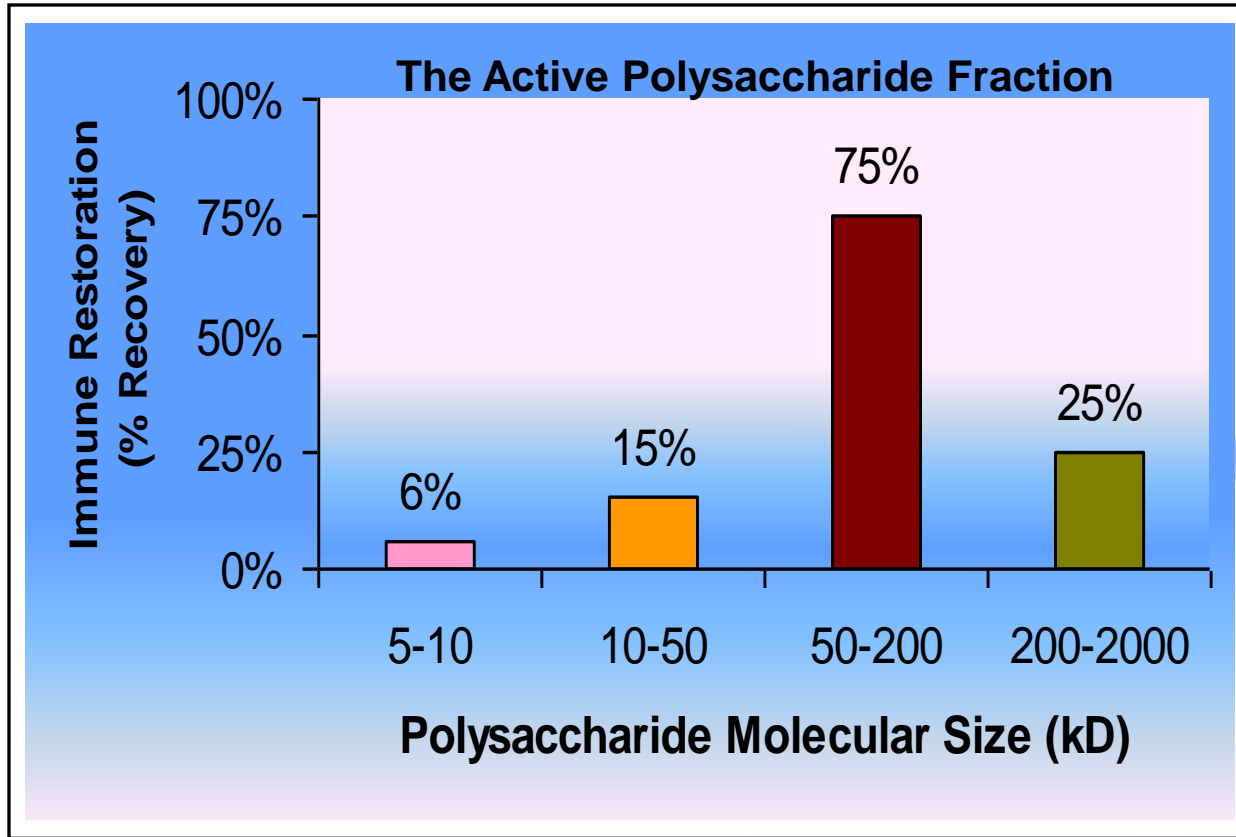
*Publication*

Modified *Aloe barbadensis* Polysaccharide  
with Immunoregulatory Activity

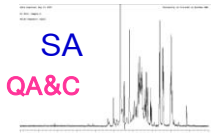
Zhihua Qiu, Ken Jones: *Planta Medica* 66, 1-5, 2000



## Modified *Aloe barbadensis* Polysaccharide with Immunoregulatory Activity



Modified *Aloe* polysaccharide restored UVB irradiation-induced immune suppression as determined by contact hypersensitivity (CHS) response in C3H/HeN mice.



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## *Our Future*

# Qmatrix™ Proprietary Processing

## QUALITY

- Qmatrix™ Proprietary Processing uses 4th generation dehydration technology... It is comparable to freeze drying in quality and has added benefits.
- Academic studies have shown that this drying process provides greater retention of nutrients and bioactive constituents in the powder as well as better flavor and color profiles.
- Academic studies show that this drying process reduces microbial contamination.
- Currently available for gel powder as 8010XQ-80 & 8010XQ-10

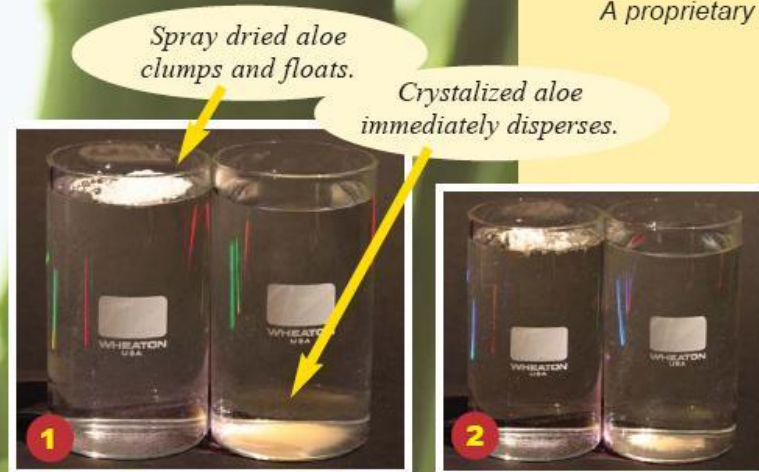


ACTIV<sup>aloe</sup>™



## Announcing Another Innovation from Aloecorp.

A proprietary process only available from Aloecorp.



### Solubility Analysis

Spray dried aloe gel powder solubility was compared with Qmatrix™ processed powder.

Equal quantities of powders were added at the same time to the same volume of room temperature water.

Spray dried aloe on the left clumps and floats whereas Qmatrix™ processed powder, on the right, immediately disperses and settles to the bottom of the vessel.

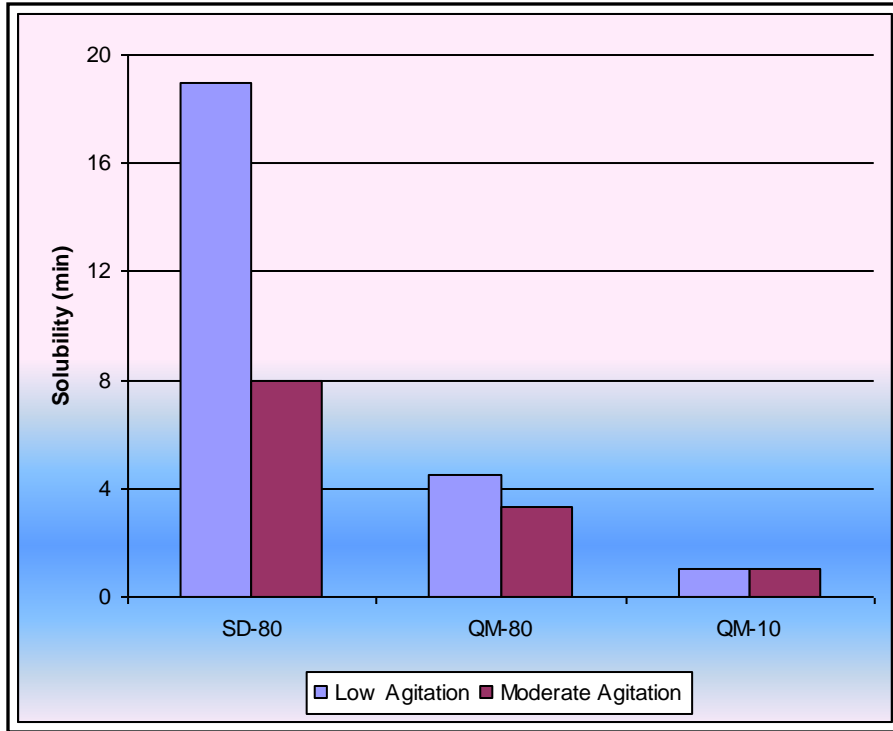
After fifteen seconds of gentle stirring the Qmatrix™ processed material is completely in solution while spray dried powder is still clumped on the surface.



Qmatrix™  
Proprietary  
Processing has  
versatility.

We are now able to optimize the product particle size from 80 mesh to 10 mesh. This dramatically alters the dispersion-dissolution profile of our powder products.

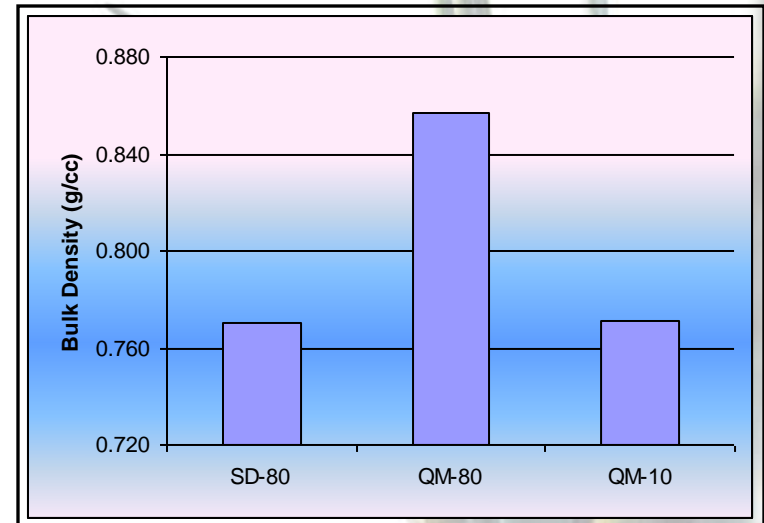
Solubility



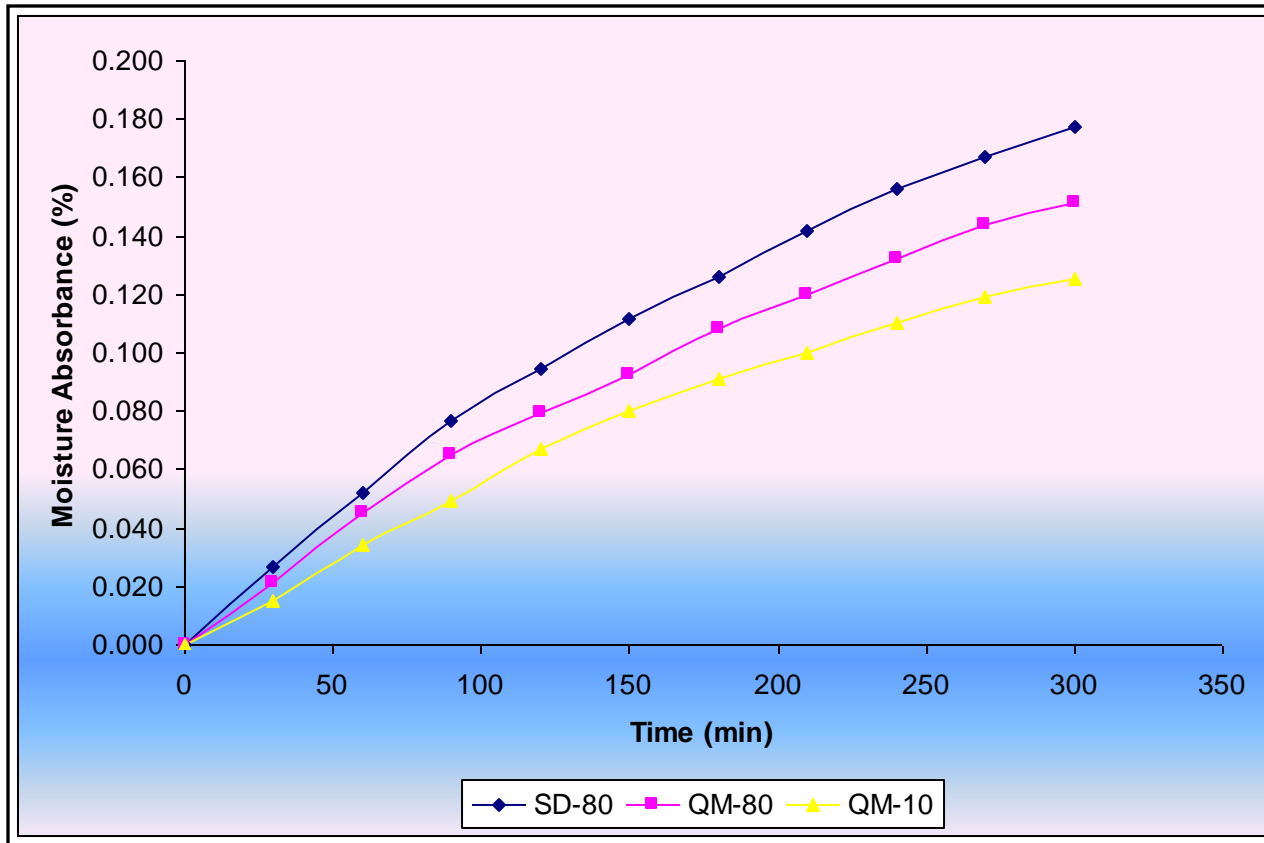
	Low Agitation	Moderate Agitation
SD-80	19	8
QM-80	4.5	3.33
QM-10	1	1

qm Solutions™

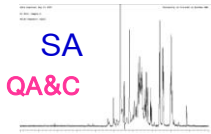
Bulk Density



## Moisture Absorbance



Qmatrix™ processed powders appear to be less hydroscopic than SD powders in preliminary testing.



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## Qmatrix™ Proprietary Process: Product Advances (8010XQ)

### Superior Quality Characteristics

- ✓ Sensory attributes (better taste and color)
- ✓ Color stability (after reconstitution)
- ✓ Shelf life (three years following testing)
- ✓ Reduced thermal degradation
- ✓ Reduced microbial degradation
- ✓ Increased retention of polysaccharides

### Superior Physical Characteristics

- ✓ Improved solubility
- ✓ Targeted bulk density
- ✓ Improved flow ability
- ✓ Less hydroscopic
- ✓ Homogeneous dry matrix

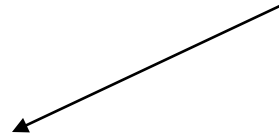


## Planned Comparative Studies

### Physical Characteristics

- Solubility rate
- Moisture absorbance
- Bulk Density
- Color (Powder)
- Color (Reconstituted)
- Color Stability (accelerated)
- Thermal degradation markers
- Microbial degradation markers
- Polysaccharide content
- Polysaccharide MWD
- Crude Protein content
- Nutritional composition
- Sensory attributes
- Total Antioxidant Activity

### Phase I studies



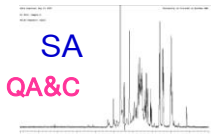
### Phase II studies



### Bio Assays

- Cell proliferation
- Wound healing
- Blood sugar
- Cholesterol
- Antioxidant
- Cardiovascular





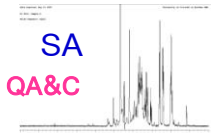
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# *Introduction to the Value Added Products*

By Qmatrix™ Proprietary Processing





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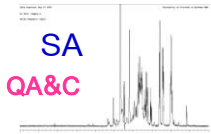
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qm Solutions™

## Qmatrix™ Drying Technology and Value Added Products Differentiating Aloecorp and its Products

- Combinations of nutritional, functional and therapeutic foods, herbs and excipients are combined with aloe to produce proprietary products.
- Liquid combinations dried by this process are stabilized in a homogeneous dry matrix.
- “Value added” proprietary products can be developed as turn-key qm Solutions™ ...
- Better flow characteristics will offer great advantages for encapsulated products.
- Qmatrix™ provides improved dissolution and dispersion rates.





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qm Solutions™

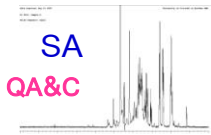
# Qmatrix™ Drying Technology and Value Added Products

## Differentiating Aloecorp and its Products

### Application Concepts

- Functional Foods for Health Maintenance
- Specialty products for energy and mental acuity
- Targeting indications such as anti-diabetic, cholesterol and cardiovascular health
- Whole foods versus concentrated extracts
- Stabilized dry homogenous crystal flakes





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## Value Added Products: **A Shield Against Disease** By Qmatrix™ Proprietary Processing

✓ Aloe Plus Cranberry

• GI and UT

✓ Aloe Plus Raspberry

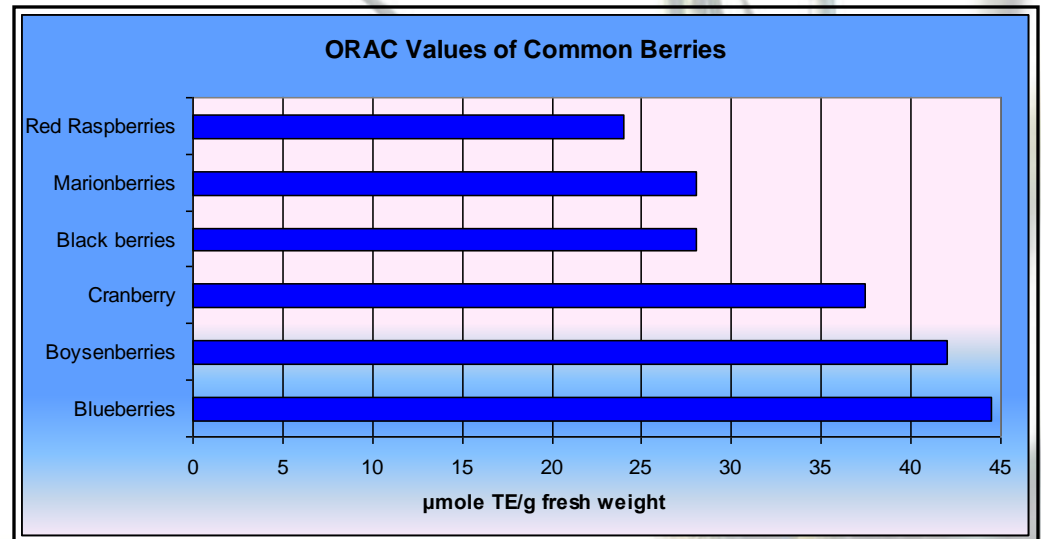
• Anti-cancer

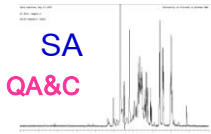
✓ Aloe Plus Pomegranate

• Cardiovascular and Cholesterol

✓ Aloe Plus Blueberry

• Memory, Vision, UT, mega anti-oxidant





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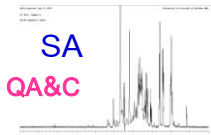
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## Value Added Products: **Broad Applications**

By Qmatrix™ Proprietary Processing

- ✓ Nutritional supplements
- ✓ Sports/healthy snack bars
- ✓ Waters
- ✓ Juices
- ✓ Shakes
- ✓ Teas
- ✓ Yogurt
- ✓ Ice cream
- ✓ Seasoning
- ✓ Dry drink mix
- ✓ Cosmeceuticals
- ✓ Cheese spreads
- ✓ Salad toppings
- ✓ Cereals
- ✓ Milk flavoring
- ✓ Gum





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## Value Added Products: **Proprietary Products!**

By Qmatrix™ Proprietary Processing

- Patent submitted November 2004

Attorney Docket: ALOE.01/PR

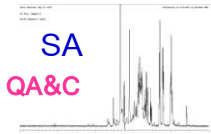
Express Mail No.:

### **DEHYDRATION OF FOOD COMBINATIONS**

FIELD of the invention

The invention relates to the drying of blends of aloe, foods or food extracts, herbs or herb extracts, supplements, and the like.





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## Value Added Products: **Product Pipeline**

By Qmatrix™ Proprietary Processing

- ✓ Aloe Plus green tea
  - anti-cancer, cholesterol & cardiovascular health
- ✓ Aloe Plus green tea, ginseng, ginkgo biloba, guarana
  - Phyte for Life, mind & energy
- ✓ Aloe Plus oil (proprietary)
  - Cosmeceuticals, supplements



## Value Added Products: **Product Development**

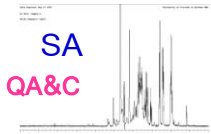
By Qmatrix™ Proprietary Processing



Product Development Partnerships are possible...

Qmatrix™ Proprietary Processing offers advantages you've seen.

- Improve solubility
- Homogeneous dry matrix
- Flow ability
- Turnkey <sub>qm</sub>Solutions™



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## Value Added Products: **qmSolutions™**

RegeniCare... an Oasis Life Science Product

Problem: Poor solubility characteristics

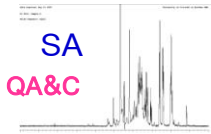
Aloecorp's **qmSolutions™** :

- Combine with aloe and dry with Qmatrix™ dehydration technology
- Dramatically improved dispersion and dissolution

**qmSolutions™** for:

- Dry blended product heterogeneity
- Poor solubility





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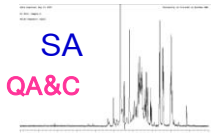
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## Value Added Products: **Aloe Plus Oil**

By Proprietary Processing

- Powder product applications
  - Proprietary process
  - Room temperature
  - High throughput
- 
- After bath talc
  - Makeup
  - Supplements
  - Functional foods
  - Provide added fortification
  - Cosmeceuticals
  - Add nutrition to your body care line





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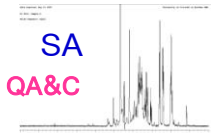
The following slides are for your reference on the bioactive constituents of our current Value Added products.



## Value Added Products: **Aloe Plus Blueberry**

- Blueberry; high in anthocyanin, an antioxidant polyphenol<sup>1</sup>.
  - Anthocyanidins are oxygen radical scavengers
  - Prevention of oxidative damage<sup>2, 3</sup>.
  - Used historically to treat macular degeneration and visual acuity.
  - ACTIValoe™ with blueberry will create a product that preserves the freshness of both ingredients while providing unparalleled solubility.
- Peripheral venous insufficiency
  - Primary dysmenorrhea
  - Gastric injury

1. Lohachoompol V, Szrednicki G, Craske J. The Change of Total Anthocyanins in Blueberries and Their Antioxidant Effect After Drying and Freezing. *J. Biomed. Biotechnol.* **2004**, 5 (2004), 248-252.
2. Martin-Argón S, Basabe B, Benedi J, Villar A. *In vitro* and *In vivo* Antioxidant Properties of *Vaccinium myrtillus*. *Pharmaceutical Biology.* **1999**, 37 (2) 109-113.
3. Seeram N P, Nair M G. Inhibition and Structure—Activity-Related Studies of the dietary Constituents Anthocyanins, Anthocyanidins, and Catechins. *J. Agric. Food Chem.* **2002**, 50, 5308-5312.



## Value Added Products: **Aloe Plus Cranberry**

- Cranberry's proanthocyanidins and fructose have been shown to help in urinary tract infection (UTI) prophylaxis<sup>1</sup> and prevention of UTI<sup>2</sup>.
  - Rich sources of antioxidant phytochemicals.
  - Contains anthocyanins and other plant phenolics with a high ORAC value<sup>3</sup>.
  - High total phenolic content of gallic acid<sup>3</sup>.
  - The gut health properties of aloe and the urinary tract health properties of cranberry are combined to make a truly functional food.
- Complete gastrointestinal and urinary tract product

1. Walker E B, Barney P, Mickelson J N, Walton R J, Mickelson R A. Cranberry Concentrate: UTI Prophylaxis. *J. Fam. Pract.* **1997** 45:2, 167-168.
2. Avorn J, Monane M, Gurwitz J H, Glynn R J, Choodnovskiy I, Lipsitz L A. Reduction of Bacteriuria and Pyuria after Ingestion of Cranberry Juice. *JAMA.* **1994**, 271:10, 751-754
3. Want SY, Stretch AW. Antioxidant capacity in Cranberry Is Influenced by Cultivar and Storage Temperature. *J. Agric. Food Chem.* **2001**, 49, 969-974.



## Value Added Products: **Aloe Plus Raspberry**

- Raspberry; a great tasting berry which contains high concentrations of phenolics especially ellagitannins<sup>1</sup>.
- Ellagitannins, when hydrolyzed in the body, form ellagic acid<sup>2</sup>.
- Ellagic acid has been shown *In vitro* to inhibit carcinogen-induced cancers<sup>3</sup>.
- Raspberry is also a potent antioxidant with a high ORAC score<sup>4</sup>.

- Anti-cancer

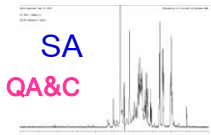
1. Kahkonen MP, Hopia AI, Heinonen M. Berry Phenolics and Their Antioxidant Activity. *J. Agric. Food Chem.* **2001**, 49, 4076-4082.
2. Cerda B, Tomas-Barberan FA, and Espin JC. Metabolism of Antioxidant and Chemopreventative Ellagitannins from Strawberries, Raspberries, Walnuts, and Oak-Aged Wine in Humans: Identification of Biomarkers and Individual Variability. *J. Agric. Food Chem.* **2005**, 53, 227-235.
3. Narayanan BA, Geoffoy O, Willingham MC, Re GG, Nixon DW. P53/p21 (Waf1/CIP1) Expression and Its Possible Role in G1 Arrest and Apoptosis in Ellagic Acid Treated Cancer Cells. *Cancer Lett.* **1999**, 136 (2), 215-221.
4. Ou, B. Characterization of Antioxidants from Blackberries, Red Raspberries, Boysenberries, Marionberries and Black Raspberries. Unpublished Study for OR Raspberry and Blackberry

## Value Added Products: **Aloe Plus Pomegranate**

- Pomegranate Juice is an excellent source of antioxidant phenols with one study showing concentrations of total phenols to be 2566 mg/L<sup>1</sup>.
- *In vitro* and *in vivo* studies suggest pomegranate phytochemicals may help with cardiovascular health<sup>2, 3, 4</sup>.
- Pomegranate juice has been shown to reduce low density lipoprotein (LDL) and increase the activity of an enzyme protecting against lipid peroxidation<sup>2</sup>.
- Cholesterol accumulation has been shown in vivo to be reduced by pomegranate juice supplementaion<sup>4</sup>.

- Healthy cholesterol and cardiovascular health

1. Gil MI, et al. Antioxidant Activity of Pomegranate Juice and Its Relationship with Phenolic Composition and processing. *J. Agric. Food Chem* **2000**, 48, 4581-4589.
2. Aviram M, et al. Pomegranate Juice Consumption reduces Oxidative Stress, Atherogenic Modifications to LDL, and Platelet Aggregation: Studies in Humans and in Atherosclerotic Apolipoprotein E-Deficient Mice. *Am J Clin Nutr.* **2000**, 71, 1062-1076.
3. Toi, M, et al. Preliminary Studies on the Anti-Angiogenic Potential of Pomegranate Fractions *in vitro* and *in vivo*. *Angiogenesis.* **2003**, 6, 121-128.
4. Kaplan, M, et al. Pomegranate Juice Supplementation to Atherosclerotic Mice Reduces Macrophage Lipid Peroxidation, Cellular Cholesterol Accumulation and development of Atherosclerosis. *J Nutr.* 2001, 131 (8): Health Module, 2082-2089.



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# Thank You

Aloecorp Grand Opening  
Sept. 11 - 15, 2005 – Texas, Mexico

Qmatrix™ Proprietary Processing





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ACTIV aloe™ 

