A NEW CONCEPT FOR IMPROVING FOOD & BEVERAGE QUALITY

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PLT HEALTH SOLUTIONS
TODAY’S DISCUSSION

We’re happy to discuss this great new technology!

OUR VALUE PROPOSITION

BACKGROUND ON PHYTOSHIELD
• What it is
• Features & Benefits

PHYTOSHIELD TESTING
• Applications
• Flavor
• Labeling

TARGET APPLICATIONS
• Beverage
• Prepared Foods

REVIEW
WHAT IS PHYTOSHIELD?

This is a line of ingredients with proprietary formulas.

- PHYTOSHIELD is a line of natural flavor systems that can be organic compliant with strong antimicrobial properties providing powerful, broad-spectrum protection.

- These flavor systems are effective against a wide range of bacteria - both gram positive and gram negative - and fungi (yeasts & molds).

- PHYTOSHIELD acts mechanistically by destroying the cellular membrane of a micro-organism.

- The anti-microbial power is a synergistic effect created by the reaction of bioflavonoids, flavor components, polyphenols and other organic acids.
HOW DOES PHYTOSHIELD COMPARE?

Unique Solution: Efficacy, "Clean-ness", and Organoleptic Impact

- Safe/Clean Label/Organic
- Broad Spectrum Efficacy

- Sodium Benzoate
- Potassium Sorbate
- Nitrates/Nitrite
- BHA/BHT
- Cultured Dextrose
- Acetic Acid
- Citric Acid

Flavor Profile:
- Mild / none
- Some impact
- Strong Impact
WHAT ARE YOU SEARCHING FOR?

We believe we can help you in 3 different ways...

REPLACING SYNTHETIC SOLUTIONS
• Cleaner label
• Better performance/cost

REPLACING ‘NON-PERFORMING’ NATURAL SOLUTIONS
• Lack of efficacy
• Not broad-spectrum
• Lack of reliability
• Taste & Texture issues
• Labeling
• Cost

NEW PRODUCT DEVELOPMENT
• Clean label
FEATURES OF PHYTOSHIELD

A broad range of formulation friendly properties

Typical Label (as supplied)
• Plant Extracts
• Flavors
• Citric Acid
• Malic Acid
• Solvent

In-Product
• Cleaner label
• Enhanced organoleptics
• Strong anti-microbial properties
• Shelf life extension
• Improved overall product quality
• Less food waste

Formulating
• Low use rates: 0.3% to 1.0%
• Broad pH efficacy (2-10)
• Temperature stable (up to 130 C)
• Easy incorporation
• Custom solutions

Status
• GMO-free
• Organic-compliant grades
• Kosher
• Non-allergenic
• Non-mutagenic
• Non-corrosive
• Non-volatile
• Light stable
COMPARISON TO SYNTHETIC PRESERVATIVES

Broad spectrum efficacy at relatively low usage rates is unique in the world of natural antimicrobials

SODIUM BENZOATE AND POTASSIUM SORBATE ARE COMMONLY USED PRESERVATIVES IN FOOD INDUSTRY

• Typical usage rate of benzoate and sorbate is 0.025% to 0.1%

• The result of MIC (minimum inhibitory concentration) testing shows PhytoShield is:
  • Comparable or more effective against Gram positive bacteria compared to sorbates and benzoates
  • Comparable or more effective against yeast compared to sorbates and benzoates
  • Comparable against Gram negative bacteria

<table>
<thead>
<tr>
<th>Time</th>
<th>Gram +</th>
<th>Gram -</th>
<th>Yeast</th>
<th>Mold</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhytoShield</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Sorbates/ Benzoates</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>

PERFORMANCE TESTING
APPLE JUICE

In a challenge study with Apple Juice, PhytoShield effectively inhibited the growth of different microorganisms (mold, yeast, and bacteria).

TEST PARAMETERS:
- Freshly prepared apple juice with 0.25% PhytoShield 421719A
- Freshly prepared apple juice with no PhytoShield (control)
- pH: 5
- Juice samples were inoculated with A. niger (mold), S. cerevisiae (yeast) and G. liquifaciens (bacteria)

RESULTS:

<table>
<thead>
<tr>
<th>Time</th>
<th>A. niger (mold)</th>
<th>S. cerevisiae (yeast)</th>
<th>G. Liquifaciens (bacteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.25% Control</td>
<td>0.25% Control</td>
<td>0.25% Control</td>
</tr>
<tr>
<td>Day 1</td>
<td>2.5x10^2</td>
<td>6.8x10^3</td>
<td>5.5x10^3</td>
</tr>
<tr>
<td></td>
<td>2.5x10^2</td>
<td>6.8x10^3</td>
<td>5.5x10^3</td>
</tr>
<tr>
<td>Day 56</td>
<td>0</td>
<td>1.0x10^6</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1.7x10^3</td>
<td>2.4x10^5</td>
<td>0</td>
</tr>
</tbody>
</table>
PhytoShield extended the shelf life of black bean salad by retarding microbial growth

TEST PARAMETERS:
• Fresh cut cilantro and peppers were blanched to preserve color
• PhytoShield (421719A) was added at 0.4% concentration (added to the juice from the diced tomatoes)
• The salad was stored at 50F and tested for aerobic plate count

RESULTS:

<table>
<thead>
<tr>
<th>Time</th>
<th>PhytoShield (0.4%)</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>APC/g</td>
<td>APC/g</td>
</tr>
<tr>
<td>Day 1</td>
<td>4900</td>
<td>3800</td>
</tr>
<tr>
<td>Day 22</td>
<td>3000 Tastes better than the control, stronger flavors, fresher</td>
<td>55,000 Mutated flavors</td>
</tr>
</tbody>
</table>
BROWN GRAVY

PhytoShield effectively extended the shelf life of brown gravy by inhibiting microbial growth

TEST PARAMETERS:
• Brown gravy with 0.25% PhytoShield 421719A (PhytoShield was added during the cool down cycle at about 120-140 F)
• Brown gravy with no PhytoShield (control)
• pH: 5.5

RESULTS:

<table>
<thead>
<tr>
<th>Time</th>
<th>PhytoShield (0.25%)</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>APC/g</td>
<td>Yeast/g</td>
</tr>
<tr>
<td>Day 1</td>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>Day 49</td>
<td>&lt;1000</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>
A FEW WORDS ABOUT FLAVOR & TASTE

We’re a ‘multifunctional flavor technology’ with a great deal of flexibility

LOW ADDITION RATE OF PHYTOSHIELD VERY OFTEN MEANS NO IMPACT ON FLAVOR

IN INSTANCES WHEN FLAVOR IS IMPACTED, INGREDIENT IS MATCHED TO THE SYSTEM AND/OR CAN BE CUSTOMIZED

• Flavored waters: Sweet flavor technology
• Gravies: Savory notes

FSI CAN WORK WITH CUSTOMER TO DEVELOP ENHANCED FLAVOR/ORGANOLEPTIC EXPERIENCE

• “Fresh” flavor in shelf life applications

FLAVOR IMPLICATIONS

Targeted/Enhanced

Complementary

No Impact
WHAT ABOUT LABELING?

Typically, PhytoShield shows up as ‘natural flavor’

LABELING WILL BE FORMULATION DEPENDENT

TYPICALLY CONSIDERED ‘NATURAL FLAVOR’

PhytoShield:
Natural Flavor (Plant Extracts)
Citric Acid
Malic Acid
Non-Flavor Ingredient: glycerin
SUGGESTED APPLICATIONS FOR PHYTOSHIELD
BEVERAGE APPLICATIONS

Clear need from a taste standpoint. Potential for ‘all natural’ products

TOP SEGMENT APPLICATIONS
• Shelf-Stable RTD
• Refrigerated
• ‘Shots’ / Liquid Supplements
• Hot-fill or pasteurized beverages
• Syrups

KEY VALUE PROPOSITIONS:
• ‘Taste’
• Broad Spectrum
• Clean Label
PREPARED FOODS APPLICATIONS

Extending shelf life for prepared foods offers significant economic benefits

TOP SEGMENT APPLICATIONS
• Soups & Sauces
• Salsas & Guacamole
• Hummus
• Ready-to eat
• Other

KEY VALUE PROPOSITIONS
• Shelf-life extension
• Clean Label
• Cost-in-use (related to Shelf Life Extension)
ALREADY SOME STRONG MARKET TRACTION…

We have been able to attract a variety of meaningful clients across multiple applications in a relatively short period of time.

- **Company A**: Used to replace Sodium Benzoate & Sorbates in a syrup product
- **Company B**: New product. Flavored Aloe water. Alternative to benzoates & sorbates
- **Company C**: Used in yogurt fruit preps for clean label (Natural Flavor)
- **Company D**: Used to prevent yeast & mold in a jam & jelly product line. Clean label. No off flavor.
REVIEWING THE PHYTOSHIELD OPPORTUNITY

Comprehensive, reliable solutions for food product quality & shelf life enhancement

In-Product
- Cleaner label
- Enhanced organoleptics
- Strong anti-microbial properties
- Shelf life extension
- Improved overall product quality
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Formulating
- Low use rates: 0.25% to 1.0%
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A NEW CONCEPT FOR IMPROVING FOOD & BEVERAGE QUALITY

FLAVOR ENHANCEMENT TECHNOLOGY THAT OFFERS STRONG ANTI-MICROBIAL ACTIVITY, BETTER ORGANOLEPTICS AND LONGER SHELF LIFE