A Natural Alternative for Longer Shelf-life

Clean Label Conference, March 25-26, 2020
A Natural Alternative for Longer Shelf-life

Reducing Food Loss & Wastage
Did you know?

» Nearly 168 Million MT of Food is lost or wasted in North America every year!

» 18% of this loss occurs during processing & distribution.

*Commission for Environmental Co-operation (CEC), Montreal, Canada
**Reasons for the Food Loss in Processing & Distribution**

» Deviations in quality causes a shortening of shelf-life and results in food loss during processing and distribution.

- **Shelf-life of Foods**
  - Microbial / External Contaminants
  - **Chemical Changes: Oxidation**
  - Chemical Changes: Enzymatic Reactions
  - Physical Changes: Moisture gain/loss Separation of Ingredients

*JH Hotchkiss, Cornell University - Paper presented at IFT Science Summit.*
Addressing Oxidation

Various methodologies have been explored industrially to address oxidation.

**Extrinsic Measures limit Oxidation**

- Packaging Technologies
- Preventive Storage
  - Temperature Controlled Storage

**Intrinsic Measures prevent Auto-oxidation**

- Antioxidant Addition
The Natural Significance

» Maintain the Goodness of natural with natural solutions

» Nearly 30% reduction in new product launches containing synthetic antioxidants

Food Products Containing Synthetic Antioxidants Launched in USA: 2016 - 2019

*MINTEL: GNPD Data
**Choosing the right Antioxidant**

- How to select a suitable Natural Antioxidant for your application?

<table>
<thead>
<tr>
<th>Antioxidant Potency</th>
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<tbody>
<tr>
<td>Antioxidant Power*</td>
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<tr>
<td>Reactivity</td>
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<table>
<thead>
<tr>
<th>Level of refinement</th>
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<tbody>
<tr>
<td>Colour / Decolourised</td>
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<tr>
<td>Odour / Deodourised</td>
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<td>Flavour / Deflavoured</td>
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<table>
<thead>
<tr>
<th>Solubility criteria</th>
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<tr>
<td>Oil Soluble / Water Soluble</td>
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<thead>
<tr>
<th>Sustainability</th>
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<tbody>
<tr>
<td>GMO Risk / Contamination Risk / Allergen Risk / Safety Studies</td>
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Available Natural Antioxidant Solutions

- 2 most widely used oil-soluble natural antioxidant molecules
  - Tocopherols
  - Carnosic Acid

**Antioxidant Potency**

<table>
<thead>
<tr>
<th>Antioxidant Power</th>
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<tbody>
<tr>
<td>Carnosic Acid</td>
<td>$t_r = 0.3$ min</td>
</tr>
<tr>
<td>Tocopherols</td>
<td>$t_r = 0.17$ min</td>
</tr>
</tbody>
</table>

**Sustainability**

- GMO Risk: Non GMO
- Major Source: Rosemary, Nuts & Seeds
- Contamination: Non

*Rosemary extracts containing Carnosic Acid is the most desired antioxidant solution*
Challenges while Using Rosemary Extracts

» Rosemary Extracts need to be made more easy-to-use and versatile.
Today’s Requirement

» Select the type of Rosemary Extract needed based on application

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<thead>
<tr>
<th></th>
<th>Rosemary Extracts (Carnosic Acid Based)</th>
<th>Ideal Solution</th>
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<tbody>
<tr>
<td>Low Colour</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>Low Odour</td>
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</table>
Ideal Solution

» Convenient easy-to-handle, potent, natural, carnosic acid based rosemary extract

OxiKan CL

Fully decolourised, Extract of selective molecules from rosemary in oil and water soluble formats
CASE STUDY:
OxiKan CL in oxidative shelf-life of Popcorn
Impact on Colour of the food

- MCT Oil is a colourless oil that is easily prone to changing colour due to the addition of extracts.

OxiKan CL did not show any impact on colour of the MCT Oil even at the highest recommended dosage levels of 400 ppm Carnosic Acid.
Impact on the Oxidative Shelf-life

Synthetic Antioxidants are generally considered to be more effective on oxidative stability.

OxiKan CL increases the shelf-life of popcorn at a fraction of the dosage of Mixed Tocopherol (Natural Antioxidant) and also outperforms TBHQ (Synthetic Antioxidants).
MAINTAIN THE GOODNESS OF NATURAL:

OxiKan CL provides a longer shelf-life naturally without impacting the colour of the food matrix
Addressing Food Loss & Wastage

» Oxidation is a major reason for food loss during processing & distribution

» Maintain the Goodness of ‘natural’ with natural antioxidant solutions

- Carnosic Acid based Rosemary Extracts proven to be highly potent [Natural Antioxidant]

- Inherent challenges in using Rosemary Extracts have been addressed - [OxiKan CL]

- Natural Alternative to using synthetics to retain the quality of the foods.
Thank You!

Kancor Green Belt - Angamaly