DuraShield™ Natural Food Protection Blends: Dual Functional and Synergistic Food Preservation System

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Shelf life limiting factors in foods

➢ Oxidation
  - Flavor
  - Color
  - Protein function/texture
  - Loss of nutrients

➢ Microbial Spoilage
  - Flavor
  - Color
  - Texture
  - Gas Production
PLANT DERIVED ANTIOXIDANTS

Plant Derived

Rosemary (Carnosic Acid, Carnosol)
Mixed Tocopherols (Vegetable Oils)

Ascorbic Acid (Corn Derived)
Acerola Cherry (Ascorbic Acid)
Citric Acid (Sugar Fermentation)
Green Tea (Catechins)
**Kalsec Natural Food Protection**

**Natural Antioxidants**
- Herbalox®
- Rosemary Extract
- Duralox®
- Oxidation Management Blends

**Natural Antimicrobials**
- Cultured Dextrose
- Buffered Vinegar

**Natural Food Protection**
- DuraShield™
- Natural Food Protection Blends
Food Protection Solutions for protein applications
Growth Inhibition of spoilage microorganisms in fresh ground turkey (vacuum package, 4°C)

Boarderline for microbial spoilage

N: Rosemary extract
P: Cultured Dextrose
V: Buffered Vinegar

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SYNERGY TEST

Synergy test with N, CD, V against *Pseudomonas*

CD: 0.2% Cultured Dextrose
N: 1% Dried rosemary (CA/CN)
V: 0.044% Buffered Vinegar
In addition to effectively inhibiting microbial spoilage, DuraShield Blends greatly suppressed oxidation in cooked chicken.
The incorporation of DuraShield Blends did not affect the flavor and aroma profile of the cooked chicken and only showed minimal impact on the herbal flavor.
Food protection solutions for alternative meats
Plant-based burger patties were frozen overnight on day of preparation (D0).
On D0, frozen patties were vacuum packaged and stored in our retail style refrigerator at 4-7°C.
Microbiological counts were performed by plating on the Plate Count Agar (PCA) medium.

**Objective**
To determine the inhibitory effects of DuraShield Food Protection Blends against spoilage microorganisms in soy-based meat alternatives.

**Material and Methods**
- Plant-based burger patties were frozen overnight on day of preparation (D0)
- On D0, frozen patties were vacuum packaged and stored in our retail style refrigerator at 4-7°C
- Microbiological counts were performed by plating on the Plate Count Agar (PCA) medium

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Ingredients</th>
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<tbody>
<tr>
<td>P*</td>
<td>Cultured Dextrose</td>
</tr>
<tr>
<td>NP</td>
<td>Rosemary Extracts+ Cultured Dextrose</td>
</tr>
<tr>
<td>P2*</td>
<td>Cultured Dextrose</td>
</tr>
<tr>
<td>NP2</td>
<td>Rosemary Extracts+ Cultured Dextrose</td>
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</tbody>
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*Treatments with cultured dextrose alone were used in this study to compare with DuraShield blends having rosemary extract in the formulation*
NP and NP2 were effective in inhibiting spoilage microorganisms throughout the shelf-life compared to control.

There was a synergistic antimicrobial effect with rosemary when blended with cultured dextrose.
Thank You

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