



- Natural Liquid Preservative
- Broad Spectrum Activity
- Safe Toxicity Profile
- Anti Oxidant Properties
- Exclusive Cultivated Fields
- Patent Pending
- Reach Compliance
- Dermatologically Tested
- Steam Distilled

## Linatural™ NLP-T



### Natural Liquid Preservative based on Turmeric, Clove Bud, Lemon Grass, and Sesame Oils

**Linatural™** is the new line of natural and/or naturally derived ingredients that bring value added to personal care, pharmaceutical and household products.

**Linatural™ NLP-T** is a patent pending natural preservative of Turmeric, Clove Bud, Lemon Grass and Sesame oils that are cultivated from exclusive fields and prepared by supercritical CO<sub>2</sub> extraction and steam distillation process.

**Linatural™ NLP-T** has excellent broad spectrum activity against gram positive and gram negative bacteria and mold and yeast. Turmeric, Clove Bud, Lemon Grass and Sesame oils are globally accepted and have excellent toxicity profiles.

|                           |   |              |
|---------------------------|---|--------------|
| <b>Typical Properties</b> | Appearance @ 25°C .....                 | Clear Liquid |
|                           | Color .....                             | Pale Yellow  |
|                           | Specific Gravity.....                   | 0.91± 0.01   |
|                           | INCI Name: Curcuma Longa (Turmeric Oil) |              |
|                           | Syzgium Aromaticum (Clove Bud Oil)      |              |
|                           | Cymbopogon Citratus (Lemon Grass Oil)   |              |
|                           | Sesamum Indicum (Sesame Oil)            |              |

|   |  |
|---|--|
| <b>Typical Use Levels/<br/>pH range</b> | 0.5% - 2.0%  |
|   | Formulation pH range 3 – 8, Optimal pH range 3 – 7 |

|                     |                              |
|---------------------|------------------------------|
| <b>Package Size</b> | 440 lb. drum and 40 lb. pail |
|---------------------|------------------------------|

|                 |                                |                             |
|-----------------|--------------------------------|-----------------------------|
| <b>Benefits</b> | » Natural Liquid Preservative  | » Broad Spectrum Activity   |
|                 | » Safe Toxicity Profile        | » Anti Oxidant Properties   |
|                 | » Global Approval              | » Heat Stability up to 60°C |
|                 | » Effective at a wide pH range |                             |

Preservative Challenge Test Data on Back

**Linatural™ NLP - T****Human Repeat Insult Patch Test (HRIPT) with 1.00% Linatural NLP-T in skin cream on 50 subjects:**

- Dermatologically Tested
- First 48 hours showed no skin irritation
- No Dermal Irritation or Sensitization

**EFFICACY DATA – PRESERVATIVE CHALLENGE TEST**

| Shampoo<br>w/addition of Linatural™ NLP-T | Challenge Data – Colony Forming Units per Gram (cfu/g)<br>Mixed Bacteria ( <i>P. aeruginosa</i> , <i>E. coli</i> and <i>S. Aureus</i> ) |                     |                     |                     |                     |
|---|---|---------------------|---------------------|---------------------|---------------------|
|   | Day 0   | Day 7               | Day 14              | Day 21              | Day 28              |
| 1.0 % Linatural NLP-T                     | 1-3x10 <sup>6</sup>   | <10                 | <10                 | <10                 | <10                 |
| Unpreserved Shampoo –pH 5                 | 1-3x10 <sup>6</sup>   | 1-3x10 <sup>6</sup> | 1-3x10 <sup>6</sup> | 1-3x10 <sup>6</sup> | 1-3x10 <sup>6</sup> |

| Shampoo<br>w/addition of Linatural™ NLP-T | Challenge Data – Colony Forming Units per Gram (cfu/g)<br>Mixed Fungi ( <i>A. niger</i> & <i>C. albicans</i> ) |                     |                     |                     |                     |
|---|--|---------------------|---------------------|---------------------|---------------------|
|   | Day 0  | Day 7               | Day 14              | Day 21              | Day 28              |
| 1.0% Linatural NLP-T                      | 1-5x10 <sup>5</sup>  | <10                 | <10                 | <10                 | <10                 |
| Unpreserved Shampoo – pH 5                | 1-5x10 <sup>5</sup>  | 1-5x10 <sup>5</sup> | 1-5x10 <sup>5</sup> | 1-5x10 <sup>5</sup> | 1-5x10 <sup>5</sup> |

| Cream<br>w/addition of Linatural™ NLP-T | Challenge Data – Colony Forming Units per Gram (cfu/g)<br>Mixed Bacteria ( <i>P. aeruginosa</i> , <i>E. coli</i> and <i>S. Aureus</i> ) |                     |                     |                     |                     |
|---|---|---------------------|---------------------|---------------------|---------------------|
|   | Day 0   | Day 7               | Day 14              | Day 21              | Day 28              |
| 2.00% Linatural NLP-T                   | 1-3x10 <sup>6</sup>   | <10                 | <10                 | <10                 | <10                 |
| Unpreserved Cream – pH 6                | 1-3x10 <sup>6</sup>   | 1-3x10 <sup>6</sup> | 1-3x10 <sup>6</sup> | 1-3x10 <sup>6</sup> | 1-3x10 <sup>6</sup> |

| Cream<br>w/addition of Linatural™ NLP-T | Challenge Data – Colony Forming Units per Gram (cfu/g)<br>Mixed Fungi ( <i>A. niger</i> & <i>C. albicans</i> ) |                     |                     |                     |                     |
|---|--|---------------------|---------------------|---------------------|---------------------|
|   | Day 0  | Day 7               | Day 14              | Day 21              | Day 28              |
| 2.00% Linatural NLP-T                   | 1-5x10 <sup>5</sup>  | <10                 | <10                 | <10                 | <10                 |
| Unpreserved Cream – pH 6                | 1-5x10 <sup>5</sup>  | 1-5x10 <sup>5</sup> | 1-5x10 <sup>5</sup> | 1-5x10 <sup>5</sup> | 1-5x10 <sup>5</sup> |

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