



**LINCOLN**  
FINE INGREDIENTS  
Subsidiary of OilChem, Inc.  
50 Industrial Circle • PO Box 94  
Lincoln, Rhode Island 02865 USA  
401.722.2410 • Fax 401.727.0752

Natural Liquid Preservative  
Broad Spectrum Acitivity  
Safe Toxicity Profile  
Anti Oxidant Properties  
Exclusive Cultivated Fields  
GMP Processing Unit  
Steam Distilled  
Patent Pending  
Reach Compliance  
Dermatologically Tested

## Linatural™ NLP



### Natural Liquid Preservative based on Curry Leaf and Cinnamon Leaf Oils

Linatural™ is the new line of all natural ingredients that bring value added to personal care, pharmaceutical and household products.

Linatural™ NLP is a patent pending natural preservative of Curry leaf and Cinnamon leaf oils that are cultivated from exclusive fields and prepared by FDA approved, GMP steam distillation process and using sugar alcohol from molasses.

Linatural™ NLP has excellent broad spectrum activity against gram positive and gram negative bacteria and mold and yeast. Curry and Cinnamon leaf oils are globally acceptance and have excellent toxicity profiles.

<b>Typical Properties</b>	Appearance @ 25°C .....	Clear pale yellow liquid
	Color (Gardner) .....	10 max
	Specific Gravity.....	0.93 ± 0.01
	INCI Name: Murraya Koenigii (Curry Leaf Oil) Cinnamomum Zeylanicum (Cinnamon Leaf Oil) Alcohol (Ethyl) – Sugar alcohol from Molasses	

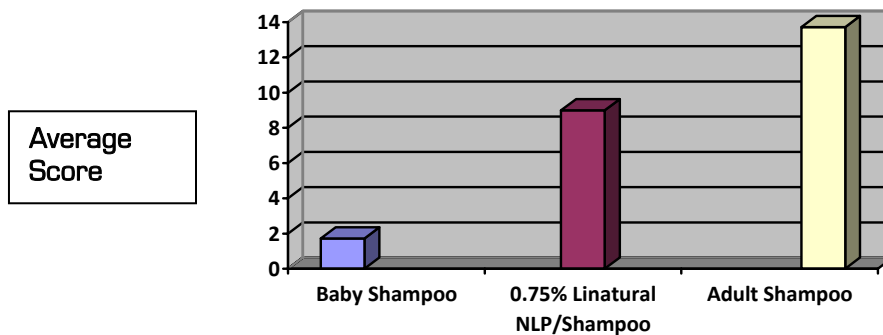
<b>Typical Use Levels/ pH range</b>	0.5% - 1.2%
	Formulation pH range 3 – 8, Optimal pH range 3 – 6

**Package Size** 440 lb drum, 55 lb. mini drums and 8 lb. bottles

<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

HET-CAM = Eye Irritation Test:



<u>Score</u>	<u>Irritation Potential</u>
0 – 4.9	Practically None
5.0 – 9.9	Slight
10.0 – 14.9	Moderate
15.0 – 32.0	Severe

Human Repeat Insult Patch Test (HRIPT) with 0.75% Linatural NLP 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 w/addition of Linatural™ NLP	Challenge Data – Colony Forming Units per Gram (cfu/g) 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
0.5 % Linatural NLP	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 w/addition of Linatural™ NLP	Challenge Data – Colony Forming Units per Gram (cfu/g) Mixed Fungi ( <i>A. niger</i> & <i>C. albicans</i> )				
	Day 0	Day 7	Day 14	Day 21	Day 28
0.5% Linatural NLP	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>

Facial Wash w/addition of Linatural™ NLP	Challenge Data – Colony Forming Units per Gram (cfu/g) 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
0.75% Linatural NLP	1-3x10 <sup>6</sup>	<10	<10	<10	<10
Unpreserved Facial Wash – 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>

Facial Wash w/addition of Linatural™ NLP	Challenge Data – Colony Forming Units per Gram (cfu/g) Mixed Fungi ( <i>A. niger</i> & <i>C. albicans</i> )				
	Day 0	Day 7	Day 14	Day 21	Day 28
0.75% Linatural NLP	1-5x10 <sup>5</sup>	<10	<10	<10	<10
Unpreserved Facial Wash – 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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