

LACTOCOCONUT EXTRACT, WATER SOLUBLE PRESERVATIVE

Suitable for beauty and personal care applications.

INCI: Lactobacillus and Cocos Nucifera (Coconut) Fruit Extract

Extraction: Maceration and Controlled Fermentation, Then Filtered

Shelf Life: 1 Year

Origin: USA

Background:

Fermenting pure Coconut Oil with Lactobacillus was found to increase bioavailability of natural phytochemicals within Coconut Oil, yielding a naturally mild, antifungal preservative. Rich in Lauric Acid, LactoCoconut Extract is ideally suited for use in conjunction with Lactobacillus Ferment to help provide greater protection against yeast and mold.

As the media continues to focus its attention on the risks of parabens, formaldehyde releasers, and other synthesized preservatives, product formulators and manufacturers are facing the growing challenge of procuring natural alternatives that provide suitable broad spectrum protection.

Praan Naturals is pleased to offer manufacturers and formulators a range of premium quality natural preservatives, including LactoCoconut Extract and Lactobacillus Ferment. Both products are especially effective when paired together.

Properties:

- Product Form: Liquid
- Solubility: Water
- Color: Clear, Slightly Hazy
- Odor: Faint, Sweet, Slightly Nutty, Characteristic Aroma
- Viscosity: Medium
- pH: 7.0-9.0
- Skin Conditioning
- Antimicrobial (Antibacterial and Antifungal)
- Microorganisms Tested:
 - E. coli
 - P. aeruginosa
 - S. aureus
 - C. albicans
 - A. brasiliensis



Uses:

LactoCoconut Extract is well suited for use as a natural antimicrobial in the production of skin care, hair care and cosmetic formulations. In addition to its application as a preservative, LactoCoconut Extract also helps to condition the skin.

LactoCoconut Extract is water-soluble and can be added to water based formulations or during the water phase of emulsions that maintain a pH range of 3-8. It is recommended that LactoCoconut Extract be added at temperatures below 158 degrees F (70 degrees C).

Recommended Usage Rate: 2 - 4%

All formulations should be challenge tested by a qualified laboratory to ensure that each batch is properly preserved. The method of production, the specific components of the formulation, the environment in which the batch is formulated and the method of packaging all play a crucial role in the resulting shelf life of a batch. Therefore, we cannot guarantee your results when incorporating natural preservatives into your formulations. Only lab challenge testing can determine how and if a preservative is achieving the desired results.

Storage Information:

Store in a cool, dry location. The ideal storage temperature range is 73-78 degrees Fahrenheit (23-25 degrees Celsius). Do not freeze or expose to excessive heat.

For more information regarding Praan Naturals LactoCoconut Extract and our range of preservatives and other natural ingredients, visit PRAANnaturals.com or call our Customer Care department at (800) 340-0080 or (203) 702-2500.





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Test Results

The ability of LactoCoconut Extract to inhibit the growth of fungi was determined using the Minimum Inhibitory Concentration (MIC) test. The results are illustrated below.

	<i>A. brasiliensis</i>	<i>C. albicans</i>
MIC%	0.50	0.50

Table 1: MIC data for LactoCoconut Extract.

Two Double Challenge Tests were conducted: (1) using 2% LactoCoconut Extract by itself and (2) using 2% LactoCoconut Extract with 2% Lactobacillus Ferment in a generic cream base formulation with a pH of 7. Samples were inoculated with the microorganisms of *E. coli*, *P. aeruginosa*, *S. aureus*, *A. brasiliensis* and *C. albicans*. During the first 28-day incubation period, samples were periodically collected and tested. Following this initial incubation, the cream samples were then re-inoculated with the cultures and samples over an additional 28-day period. The results are shown in the following two tables.

Challenge Test Results: LactoCoconut Extract

	<i>E. coli</i>	<i>P. aeruginosa</i>	<i>S. aureus</i>	<i>A. brasiliensis</i>	<i>C. albicans</i>
Inoculum (Initial) CFU/ml	8.4x10 ⁶	4.8x10 ⁶	3.2x10 ⁶	4.0x10 ⁵	1.1x10 ⁵
Day 0	99.802%	99.541%	99.263%	99.999%	99.999%
Day 7	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%
Day 14	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%
Day 21	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%
Day 28	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%
Inoculum (Reinoculated) CFU/ml	3.5x10 ⁶	3.2x10 ⁶	1.8x10 ⁶	1.2x10 ⁵	2.9x10 ⁵
Day 7	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%
Day 14	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%
Day 21	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%
Day 28	<99.000%	<99.000%	<99.000%	>99.999%	>99.999%

Table 2: Challenge Test results for the Generic Cream Formula (pH 7) with 2% LactoCoconut Extract inoculated on Day 0 and re-inoculated on Day 28. Results show % reduction in viable organisms.



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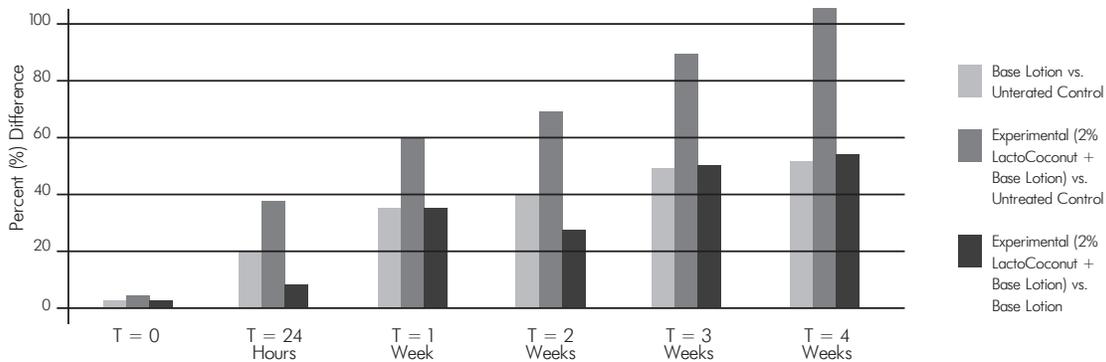
Test Results (Continued)

Challenge Test Results: LactoCoconut Extract and Lactobacillus Ferment

	<i>E. coli</i>	<i>P. aeruginosa</i>	<i>S. aureus</i>	<i>A. brasiliensis</i>	<i>C. albicans</i>
Inoculum (Initial) CFU/ml	4.5x10 ⁶	7.8x10 ⁶	3.1x10 ⁶	4.0x10 ⁵	5.4x10 ⁵
Day 0	99.939%	99.993%	99.858%	99.995%	99.981%
Day 7	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 14	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 21	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 28	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Inoculum (Reinoculated) CFU/ml	3.5x10 ⁶	3.2x10 ⁶	1.8x10 ⁶	1.2x10 ⁵	2.9x10 ⁵
Day 7	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 14	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 21	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 28	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%

Table 3: Challenge Test results for Generic Cream Formula pH 7 with 2% LactoCoconut Extract and 2% Lactobacillus Ferment inoculated on Day 0 and re-inoculated on Day 28. Results show % reduction in viable organisms.

An in-vivo study was also conducted over the course of three weeks to evaluate LactoCoconut Extract's ability to increase moisturization. Ten (M/F) subjects between the ages of 23-45 participated in the study. A DermaLab Corneometer was used to measure the moisture levels on the subjects' volar forearms. The Corneometer is an instrument that measures the amount of water within the skin. Baseline measurements were taken on day one of the study. Following initial measurements, all subjects were to apply 2mg of the positive control and test material to the denoted area on their respective forearms, twice a day for three weeks. The test material consisted of 2.0% LactoCoconut Extract + Base Lotion and the positive control (base lotion) used was Cetaphil Moisturizing Lotion for All Skin Types.



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