

LACTOBACILLUS FERMENT, WATER SOLUBLE PRESERVATIVE

Suitable for beauty and personal care applications.

INCI: Lactobacillus Ferment

Extraction: Controlled Fermentation, Lysozyme Added to Facilitate Controlled Cell Lysis, Then Filtered

Shelf Life: 1 Year

Origin: USA

Background:

Lactobacillus is a genus of bacteria that is heralded for its use as a probiotic, beneficial for human digestion. It is traditionally used as a natural fermenting agent for use in the production of yogurt, kimchi, sauerkraut, kefir and a variety of other fermented foods.

Lactobacillus Ferment acts as a natural broad-spectrum antimicrobial in aqueous products and in oil-in-water emulsions by acidifying the environment and producing antimicrobial peptides called bacteriocins. Additionally, it lends nutritive skin conditioning benefits to personal care formulations.

As the media continues to focus its attention on the risks of parabens and other synthetic 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 Lactobacillus Ferment.

Properties:

- Product Form: Liquid
- Solubility: Water
- Color: Clear, Slightly Hazy
- Odor: Very Faint, Characteristic Aroma
- Viscosity: Thin
- pH: 3.0-7.0
- Skin Conditioning
- Antimicrobial (Antibacterial and Antifungal)
- Microorganisms Tested:
 - E. coli
 - P. aeruginosa
 - S. aureus
 - C. albicans
 - A. brasiliensis



Uses:

Lactobacillus Ferment 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 natural antimicrobial, Lactobacillus Ferment also helps to condition the skin.

Lactobacillus Ferment 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 Lactobacillus Ferment be added during the cooling phase at temperatures below 158 degrees F (70 degrees C) and added prior to the addition of thickeners such as xanthan gum or Carbopol Ultrez 10.

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:

Mix well before use. Store in a cool, dry location. The ideal storage temperature range is 73-78 degrees Fahrenheit (23-25 degrees Celsius). Do not freeze.

For more information regarding Praan Naturals Lactobacillus Ferment 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 Lactobacillus Ferment to inhibit the growth of a variety of bacteria and fungi was determined using the Minimum Inhibitory Concentration (MIC) test. The results are illustrated below, showing that this material provides broad spectrum antimicrobial protection.

| | <i>E. coli</i> | <i>P. aeruginosa</i> | <i>S. aureus</i> | <i>A. brasiliensis</i> | <i>C. albicans</i> |
|------|----------------|----------------------|------------------|------------------------|--------------------|
| MIC% | 0.75 | 1.00 | 1.00 | 1.00 | 0.75 |

Table 1: MIC data for Lactobacillus Ferment.

A Double Challenge Test using 2% Lactobacillus Ferment was also conducted to evaluate the ability of the product to provide antimicrobial protection in finished formulas. A basic O/W emulsion was used as the base. The samples were inoculated with *E. coli*, *P. aeruginosa*, *S. aureus*, *A. brasiliensis* and *C. albicans* and incubated for 28 days. During this period, samples were periodically collected and tested for the presence of viable microorganisms. Following the initial 28 days of incubation, the samples were re-inoculated with the microbial cultures for another period of 28 days. The results are shown below.

| | <i>E. coli</i> | <i>P. aeruginosa</i> | <i>S. aureus</i> | <i>A. brasiliensis</i> | <i>C. albicans</i> |
|-------------------------|---------------------|----------------------|---------------------|------------------------|---------------------|
| Inoculum (Initial) | 7.0x10 ⁶ | 7.0x10 ⁵ | 5.1x10 ⁶ | 1.7x10 ⁶ | 4.7x10 ⁶ |
| Day 0 | >99.999% | 99.857% | >99.999% | 99.996% | 99.997% |
| 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) | 8.2x10 ⁷ | 1.6x10 ⁶ | 1.0x10 ⁶ | 3.3x10 ⁶ | 1.7x10 ⁶ |
| Day 7 | >99.999% | 99.985% | 99.987% | 99.977% | 99.975% |
| 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 2: Challenge Test results for 2% Lactobacillus Ferment in O/W emulsion.

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