



AMS Leucidal® Advanced-Aloe

Active Micro Systems

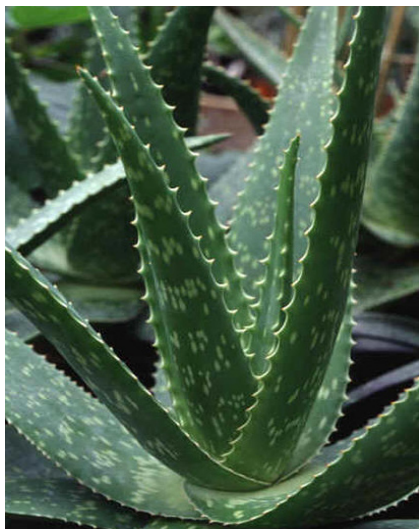
Technical Data Sheet

BACKGROUND

Aloe is a plant whose medicinal use was first documented by the Egyptians around 1500 B.C. Native to arid climates, the leaves resist desiccation and contain a thick sap known for its healing properties. Over the years, aloe has been used to treat eczema, psoriasis, allergic reactions and insect bites. Today aloe is commonly used to relieve sunburn pain and redness due to its excellent moisturizing and soothing benefits.

SCIENCE

Active Micro Systems, LLC (AMS) has developed techniques to combine the performance of botanical extracts and fermentation products with the natural defense mechanisms employed by microorganisms. This exciting synergy results in products offering both traditional skin care benefits and antimicrobial properties.



Fermentation is a natural process that releases the plant's active components while delivering additional nutrients. Manufacturing begins with macerated aloe leaves, a rich growth medium, and the *Leuconostoc* culture to produce a ferment filtrate. Ferment filtrates of this nature provide cosmetic bioactives valued for their ability to soothe, nourish and moisturize.

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AMS has an ongoing interest in harnessing the natural mechanisms used by microorganisms to protect themselves. In the case of **AMS Leucidal® Advanced - Aloe**, we are capitalizing on the ability of certain *Leuconostoc* species to restrict competition by producing antimicrobial peptides. With modern biotechnology, we are able to create a fermentation extract with an effective concentration of these natural peptides. **AMS Leucidal Advanced - Aloe** not only delivers the cosmetic benefits, but also has the ability to protect cosmetic formulations from microbial contamination.

Code Number: M15015

INCI Nomenclature:

Water & *Leuconostoc/Aloe barbadensis* Leaf Ferment Filtrate

INCI Status: Proposed

REACH Status: Fully Compliant

CAS Number: 7732-18-5 & N/A

EINECS Number: 231-791-2 & N/A

Origin: Biotechnology/Botanical:

Leuconostoc spp. & *Aloe barbadensis*

Processing:

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

No Ethylene Oxide treatment

No Hydrogenation

Additives: None

-Preservatives: None

-Antioxidants: None

Other additives: None

Solvents used: Water

Appearance: Clear to Slightly Hazy Liquid

Soluble/Miscible: Aqueous Ferment Filtrate

Suggested Use Levels: 1.0 - 2.0%

Suggested Applications:

Moisturizer, Skin Conditioner, Antimicrobial



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Minimum Inhibitory Concentrations (MIC), using a standard growth media dilution method and both bacterial and fungal cultures, were determined to evaluate the ability of **AMS Leucidal Advanced - Aloe** to protect against microbial proliferation. The results shown in Figure 1 indicate that **AMS Leucidal Advanced - Aloe** can provide effective protection for cosmetic formulations.

Microorganism Tested	MIC (%)
<i>E. coli</i>	0.75
<i>S. aureus</i>	1.00
<i>P. aeruginosa</i>	0.50
<i>C. albicans</i>	0.50
<i>A. brasiliensis</i>	2.00

Figure 1. MIC data for **AMS Leucidal Advanced-Aloe**

	<i>E. coli</i>	<i>S. aureus</i>	<i>A. brasiliensis</i>	<i>P. aeruginosa</i>	<i>C. albicans</i>
Inoculum (initial)	1.2x10 ⁶	8.0x10 ⁵	4.5x10 ⁵	2.1x10 ⁴	2.0x10 ⁴
Day 0	>99.999%	96.250%	99.780%	>99.999%	95.000%
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 (re-inoculated)	5.4x10 ⁵	1.0x10 ⁷	8.0x10 ⁴	4.0x10 ⁴	1.0x10 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%

Figure 2. Challenge Test results for 2% **AMS Leucidal Advanced - Aloe** in O/W emulsion inoculated on day 0 and re-inoculated on day 28. Results show % reduction in viable organisms.

A Double Challenge Test was then completed using 2% **AMS Leucidal Advanced - Aloe** in a generic cream base formulation to confirm its ability to provide product preservation. Samples of cream were inoculated with bacterial and fungal cultures and then monitored for 28 days for microbial survival. The creams were re-inoculated and monitored for an additional 28 days. Figure 2 shows the positive preservation results for **AMS Leucidal Advanced - Aloe**.

USE RECOMMENDATIONS

AMS Leucidal Advanced - Aloe is temperature stable and its antimicrobial properties are most effective between pH 3 and 8. The suggested use levels are typically between 1 and 2%. This unique ingredient delivers the skin conditioning benefits of soothing and moisturization, while functioning as a natural preservative in many cosmetic formulations.