




Miracle Everyday L-44 F In Meat And Meat Products

Aussan Laboratories India Pvt. Ltd.



Introduction

- Miracle Everyday L-44 F is a product based on a BIOFLAVONOID extracted from bitter orange peel, hence is FOOD SAFE
- L-44 F has potent :
 -  Anti-microbial properties – Eliminate all harmful pathogens
 -  Anti-oxidant properties - Prevents oxidation
 -  Anti-inflammatory properties – Reduces inflammation
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- These enable use of L-44 F as a Shelf Life Enhancer.
- Miracle Everyday L-44 F has varied applications in Dairy, Hotels / Catering (HORECA) Confectionary, Agricultural produce, and many more.

Composition Of L-44 F

100 % ORGANIC CERTIFIED

INGREDIENTS	LISTING IN FSSAI REGULATIONS	CAS NO
Citrus Aurantium Extract	Listed in FSSAI's <u>Nutraceutical ingredient list.</u>	928-587-7
Lactic Acid	Listed in FSSAI's Processing Aids as <u>Flocculating Agent.</u>	50-21-5
Octanoic Acid	Listed in FSSAI's Processing Aids as <u>Microbial Control Agent</u>	124-07-2
Glycerine	Listed in FSSAI's Processing Aids as <u>Lubricant, Antistick Agent.</u>	56-81-5
Purified Water		

NOTE :- All the ingredients in L-44 are 100% organic and are naturally derived.

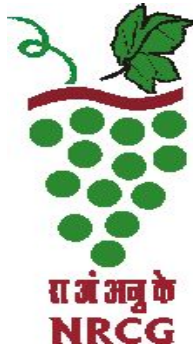
Certifications



FSSAI approved
food stabilizer
enhancing shelf life
of foods.



Organically
Certified by
NASAA



Tested Chemical
residues free



All ingredients of
the product are
listed on the USFDA
'Food Additive
Status List'



राष्ट्रीय बागवानी अनुसंधान एवं विकास प्रतिष्ठान
National Horticultural Research & Development Foundation

Tested Pesticidal residues
free

Mechanism of Microcidal Action

- Miracle Everyday L-44 F kills Spoilage organisms and Pathogens of concern in Food Safety and Shelf life.
- Broad spectrum disinfectant effective against bacteria, fungi and certain RNA and DNA viruses.
- Works by causing cell-wall intrusion, complexation of key cations and disruption of protein functioning which affects cellular as well as non-cellular microbes.
- Since it is mechanical killing action, resistance development by microbes is prevented.

Tested And Effective Against

BACTERIA

- *Staphylococcus aureus*
- *Escherichia coli*
- *Proteus vulgaris*
- *Methicillin-resistant Staphylococcus aureus*
- *Pseudomonas aeruginosa*
- *Legionella pneumophila*
- *Salmonella spp.*
- *Listeria monocytogens*
- *Food spoilage bacteria*

VIRUS

- H1N1 virus
- SARS - CoV 19
- Lumpy Skin Disease Virus

FUNGI AND SPORES

- *Aspergillus niger*
- *Aspergillus brasiliensis*
- *Brettanomyces*
- *Candida albicans*
- *Food spoilage fungi*

Applications

- Miracle everyday I-44 f is proposed as an organic shelf life enhancer through application on surfaces of raw foods like fruits and vegetables, chicken, meat, eggs, fish, or their prepared ready to use cuts, or semi processed portions to increase their shelf life.
- Dipping or fogging the raw food with Miracle Everyday L-44 F with 0.2% - 1%* concentration for a certain period of time, then packaging and storing could increase up-to 50% of shelf life of food.
- *Based on specific Raw material.

Fresh Meat Spoilage

- Microbial growth, oxidation, and enzymatic autolysis are the three basic mechanisms responsible for the spoilage of meat.
- The survival and growth of microorganisms are influenced by the composition of the atmosphere surrounding the meat.
- Pathogenic microbial species contaminating meat are *Salmonella enteric strains*, *Yersinia enterocolitica*, *Campylobacter jejuni*, *Aeromonas hydrophila*, *Listeria monocytogenes*, and *Escherichia coli*.
- Mold species found in meat include *Cladosporium*, *Sporotrichum*, *Geotrichum*, *Penicillium*, and *Mucor* while yeasts species include *Candida spp.*, *Cryptococcus spp.*, and *Rhodotorula spp.*

Refrigerated Meat Spoilage

- When fresh meat is refrigerated at $4 \pm 1^{\circ}\text{C}$, they remain in good condition for 5-7 days
- Refrigerated temperature favors the growth of psychrophilic organisms in due course of time.
- The important bacterial genera associated with spoilage of refrigerated meat are *Acinetobacter*, *Moraxella*, *Pseudomonas*, *Aeromonas*, *Alcaligenes*, and *Micrococcus*.
- Generally, *Brochothrix thermosphacta* and lactic acid bacteria are the bacteria that cause spoilage of refrigerated meat.

Cured Meat Spoilage









- Cured meat is the meats in which are preserved by aging, drying, canning, brining, or smoking for enhancement of flavor and to extends its shelf life.
- The cured meat has a long shelf-life compared to fresh and raw meat however they are not immune to spoilage.
- The bacterial spoilage causing organisms in processed and cured meats are lactic acid bacteria (such as *Lactobacillus sake*, *Lactobacillus curvatus*, *Leuconostoc gelidium*, *Leuconostoc carnosum*, *Leuconostoc mesenteroides*), *Acinetobacter*, *Bacillus*, *Micrococcus*, *Serratia*, and *Staphylococcus*.
- The spoilage causing mold found in cured meat includes *Aspergillus*, *Penicillium*, *Rhizopus*, and *Thamnidium* and the spoilage causing yeast found in cured meat includes *Candida*, *Debaryomyces*, *Torula*, *Torulopsis*, and *Trichosporon*.

Aim : Efficacy of Miracle Everyday L44-F on raw mutton pieces. – Goat meat was studied at in-house laboratory.

Methodology :

- **Four Samples of MUTTON pieces (500g each lot) were rinsed with potable water**
- **The above samples were dipped in L44F solutions at concentrations T1- 0.2 %, T2 – 0.35 % , and T3 – 0.5 % , and Control samples were dipped in clean water, followed by a 5-minute immersion period.**
- **Treated and control samples were stored at 2-8°C post-dipping, and examined at 24-hour intervals up -to 120 hours for changes in physical appearance, color, smell, and microbial loads through swab collection.**

Meat Trials

Day	Control	T1 (2 ml)	T2 (3.5 ml)	T3 (5 ml)
Day 1				
Day 4				

Microbial Analysis

SAMPLING DAY	Sample	Conc.	TVC*	Coliform	Staph.*	Y&M*
Day 1	Control	-	TNTC x 10 ⁵	1x10 ³	10 x 10 ²	7x10 ³
	T1	2 ml	NG	NG	1 x 10 ²	2 x 10 ³
	T2	3.5 ml	NG	NG	NG	NG
	T3	5 ml	NG	NG	NG	NG
Day 4	Control	-	TNTC x 10 ⁵	TNTC x 10 ³	137 x 10 ²	5 x 10 ³
	T1	2 ml	NG	NG	NG	1 x 10 ²
	T2	3.5 ml	NG	NG	NG	NG
	T3	5 ml	NG	NG	NG	NG

** TNTC – Too Numerous To Count in plated dilutions as indicated, NG – No Growth, TVC – Total Viable Count, Staph. – *Staphylococcus aureus*, Y&M – Yeast and Mold **

Physical Observation

Observation Day	Control	T1 (2ml)	T2 (3.5 ml)	T3 (5 ml)
Day 1	Characteristic smell of meat	Characteristic smell of meat	Characteristic smell of meat	Characteristic smell of meat
Day 2	Unusual off smell	Characteristic smell of meat	Characteristic smell of meat	Characteristic smell of meat
Day 3	Black lining, Off smell, Patches of discoloration- Started spoilage	Less off smell than control	Less off smell than control	Characteristic smell of meat
Day 4	Wrinkled skin surface, Bacterial contamination, Foul smell intensity increased- Spoiled	Wrinkled skin surface, discoloration, and off-odor less than control, Spoiled.	Skin surface wrinkled, discoloration, and off-odor less than control- Spoiled.	Skin surface wrinkled, discoloration, and off-odor less than control- Spoiled.

Results

- **Miracle Everyday L-44 F successfully eliminated all the spoilage micro-organisms until four days of storage. The meat sustained its texture, flavor and smell for up to 3 days in 2-8 degree C storages.**
- **The above evaluation of the L44-F organic solution's efficacy in preserving raw mutton – Goat Meat reveals promising results.**
- **The findings also suggest that the L44-F solution has the potential to enhance shelf life and ensure microbiological stability in cut fresh meat in general.**

Conclusion

- Efficacy of L-44 F to destroy even the harmful pathogenic bacteria like *Pseudomonas*, *Escherichia coli*, *Salmonella*, *Listeria monocytogenes*, along with spoilage Yeast and molds at minimal concentrations has been proven in other studies as well.
- It is proposed that to kill Lactic Acid Bacteria responsible for meat spoilage, the concentrations may be dosed at higher rates, starting from 2%.
- Longer period stability may be achievable at 2-4 Degree C storage for better results.