



## **Lallemand Bio-Ingredients – Savory**

**Product Portfolio and main applications**





## Lallemand Bio-Ingredients – Savory

Lallemand Bio-Ingredients develops, manufactures and markets high-value yeast products including whole cell nutritional yeast, yeast extracts, and yeast derivatives. Using research and development, proven results, and knowledge from experience, while being a flexible solution provider, Lallemand Bio-Ingredients applies the right yeasts for the right applications to have the greatest impact for our customers.

Our mission is to be a leading and trustworthy ally for inactive yeast products by utilizing our personalized solutions to contribute to the prosperity of our partners. We believe that successful partnerships come from cooperation.

### HIGHLIGHT

We care about the planet, and our aim is to give to consumers multiple good and sustainable options to follow their lifestyle and culinary wishes.

### INFO

#### Savory's ingredients are :

- Clean label
- Suitable for plant-based foods
- From natural origin
- A source of protein, fiber, minerals, and vitamins
- Non-GMO
- Kosher and Halal Certified
- Available in organic form
- NGP verification program available for United States and Canada

Virtual Tour:  
Lallemand Bio-Ingredients  
Salutaguse, Estonia plant



Video interview: Rasmus Nielsen,  
Customer Service and Logistics Manager  
presents De Danske Gaerfabrikker





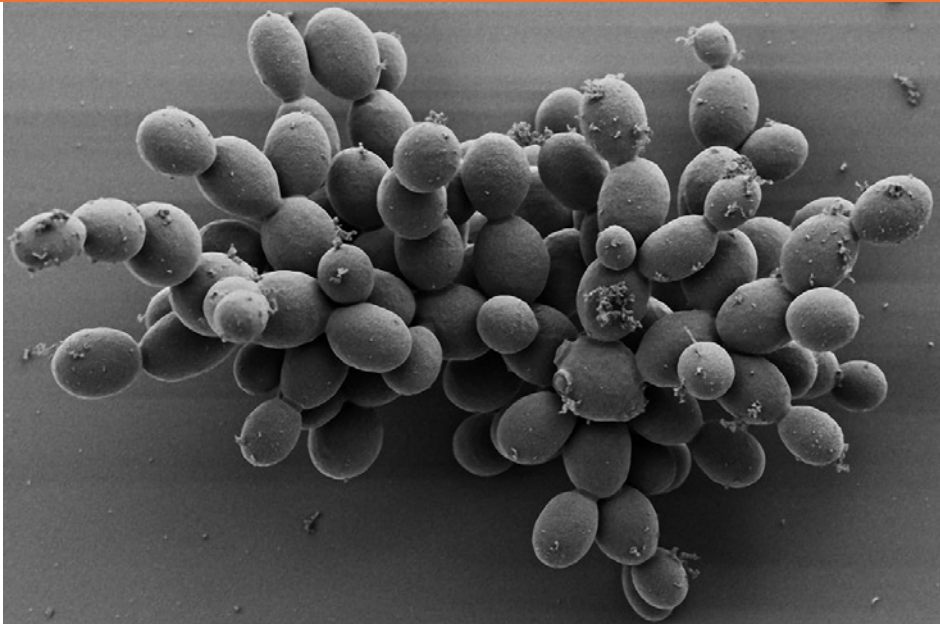
- 
- (1) LALLEMAND INC. HEADQUARTERS  
Montreal, Quebec, Canada
  - (2) LALLEMAND INC.,  
CORNWALL FACILITY  
Cornwall, Ontario, Canada
  - (3) LALLEMAND INC., TARA FACILITY  
Tara, Ontario, Canada
  - (4) LAKE STATES YEAST LLC (LSY)  
Rhinelander, Wisconsin, U.S.
  - (5) MINNESOTA SPECIALTY YEAST LLC  
Hutchinson, Minnesota, U.S.
  - (6) DE DANSKE GAERFABRIKKER A/S  
Grenaa, Denmark
  - (7) DE DANSKE GAERFABRIKKER A/S,  
LUNDERSKOV FACILITY  
Lunderskov, Denmark
  - (8) A.S. SALUTAGUSE PÄRMITEHAS  
Salutaguse, Estonia
  - (9) BIOTEC BETAGLUCANS AS  
Tromsø, Norway

## Our facilities

Today, Lallemand has production plants, distribution centers, and offices located in over 50 countries across 5 continents. Lallemand Bio-ingredients runs facilities dedicated to inactive yeast and yeast fractions in 5 different countries. Thanks to this global network, we are able to serve our customers worldwide and create innovative products and solutions with the highest standards of quality, reliability, and flexibility.



Fermentation hall in  
De Danske Gaerfabrikker



Yeast cream

## 7 things to know about yeast

- 1) Yeast belongs to the fungus kingdom. Although not biologically classified as plants, fungi- and algae-based products are usually included in the definition of plant-based foods.
- 2) Yeast is present everywhere in the environment: in the air, in the water, in the soil, as well as on the surface of plants. Where nutrient levels are high enough and where there is adequate temperature, pH, and humidity, there is yeast!
- 3) Yeast is utilized in a wide range of applications:
  - As "fermentation" for food and drink production: bread, pizza, alcoholic drinks such as wine and beer
  - For bio-ethanol production
  - To restore the intestinal flora
  - To synthesize high-value-added therapeutic proteins
  - As a model for studying the properties of eukaryotic cells
- 4) Inactivated yeast is a very useful ingredient for the food and flavors industry.
- 5) Nutritional yeast can add nutritional value and taste to one's meals.
- 6) It is possible to separate valuable fractions, such as yeast extracts, cell walls and beta glucans from inactivated yeast.
- 7) The yeast production is a sustainable one – yeast grows on molasses, the byproduct of sugar production. After the fermentation and yeast separation, the leftover material can be utilized as organic fertilizer. Water used in facilities during the production steps can be treated, purified, and reintroduced in the environment.



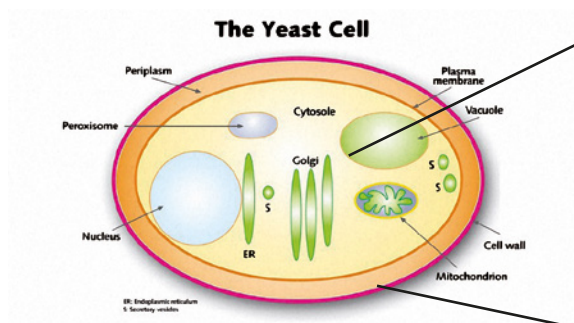
Nutritional Yeast flakes



Inactive yeast powder



## YEAST CELL



## Contents

Contents  
Cytosol  
50-60%

- Proteins
- Carbohydrates
- RNA
- Fat

Cell walls  
40-50%

- Proteins
- Fat/lipids
- Glucan
- Mannan
- Sterols
- Phosphorus
- Calcium

## Yeast Properties

Whole cell yeast contributes various nutrients and base flavors, depending on:

- Strain
- Fermentation substrate
- Drying method
- Particle size

Nucleus and intercellular material:

- Enhances flavor
- Adds to salt perception
- Bounds minerals
- Fermentation activator

Cell wall:

- Adds mouthfeel and texture
- Changes flavor impact
- Masks off-flavors
- Immuno stimulator
- Vitamin D precursor

## Yeast composition

Yeast has a lot to offer, as whole cell or by fractions. Each component has specific characteristics and properties, which can be applied in food production. The production steps would also have an influence in the resulting products. A way to understand this could be by testing the differences between a spray-dried and a roller-dried nutritional yeast. Ask us for a sample!

## HIGHLIGHT

With continuous investments in the yeast ingredients, we aim to follow the key macro combination: a healthy future for the people and the planet!

## Learn more about our production processes

Torula



Inactive dry yeast



Yeast cell walls and yeast extracts







## The largest and most specialized torula yeast range worldwide

### Toravita®

#### THE CLASSICS

##### Toravita® 001

High quality primary grown, dried inactive yeast has applications in a wide variety of food systems where high quality and a uniform mild flavor are required. It is often used in seasoning mixes as a carrier for spices, oleoresins, and smoke flavorings. Used at 0.3-0.9% in the finished product, it enhances meat and poultry flavors, batters and bakery items. Suitable for low and reduced fat systems.

##### Toravita® 027

Autolyzed yeast suggested in any food system that requires a distinctive flavor impact with low dosages. Low sodium foods, poultry stuffing and seasoning blends for poultry or pork meat are the typical applications.

##### Toravita® 054

Autolyzed yeast, naturally rich in savory relevant components such as nucleotides and glutamic acid, is a potent umami donator. It can be applied in many savory applications, from snacks to meat or plant-based products, to round-up the flavors.

### Highlight

#### Get the best out of torula yeast

Torula (*Cyberlindnera jadinii*) is capable of growing on pentose sugars, increasing the variety of suitable growth substrates compared to *Saccharomyces cerevisiae*. As a result, a larger variety of taste profiles and functionalities are possible.

#### SPECIFIC FOR SODIUM REDUCTION

##### Toravita® 029 SD

Is a unique, low sodium, yeast autolysate that adds “salty” flavor without adding substantial sodium. This co-processed combination of potassium chloride and a yeast autolysate is significantly less bitter than potassium chloride alone. It also provides the flavor enhancement characteristics common to all our autolyzed yeast products.

#### THE MEAT PROCESSOR'S FAVORITES

##### Toravita® 030

Low sodium autolyzed yeast conceived to enhance flavors in meat products, especially emulsions. It provides meat processors an effective flavoring ingredient. Also available without the oil coating as Toravita® 032.

##### Toravita® 033

A very specific yeast autolysate designed to enhance flavors in emulsified meat products. Its powerful contribution is helpful to avoid monosodium glutamate in meat preparations. Its high water-binding nature suits formulations to replace phosphates in the food matrix.

**Learn more about the product range  
and discover inspiring recipes**





## ACID TONERS AND MASKING AGENTS

### Toravita® 300

Functional ingredient derived from primary grown inactive yeast, effective in masking the undesired flavor attributes of the vegetable alternative proteins (grassy, hay, bitterness, etc.).

### Toravita® 600

Multi-functional food ingredient derived from primary grown inactive yeast. It aims to improve the flavor of fat-reduced, pourable salad dressings by reducing the "acid bite" of vinegar. The addition of Toravita® 600 to any salad dressing system produces a smoother, more balanced flavor. If the dressing or food preparation is dairy based, Toravita® 604 would be the perfect selection!

## Bakon®

### Bakon® Memphis Style

Has a powerful hickory smoked flavor profile. It contributes the typical BBQ flavor notes, evoking the cooking style of Memphis area, in addition to boosting the overall flavor profile. It also masks off-flavors associated with soy. It is suitable for meat applications, soups, stews, snack foods, dry seasoning mixes, and vegan and vegetarian meals. The standard dosage range is from 0.5 to 3.0% in the finished product.

Discover inspiring recipes



## Lake States®

### Lake States® Type B

Primary-grown, dried whole-cell inactive yeast. It is an outstanding flavor carrier, with distinctive savory flavors and texture-enhancing properties. The original, classic product.

### Lake States® Type L

Primary-grown, dried whole-cell inactive yeast. With its meaty taste and umami profile, it is an outstanding flavor carrier, delivering mouthfeel and texture-enhancing properties. It is lighter in color compared to LS Type B.

### Lake States® Type E

Primary-grown, dried whole-cell inactive torula yeast, is produced in Estonia and complies with NGP certification and Non-GMO Project Verification.

Learn more about the product range and discover inspiring recipes

Learn more about torula and its applications for the food industry













## Engevita®

The Engevita® brand has been enjoyed by consumers since the 1950s. It is a premium, whole-food, cultured, inactive nutritional yeast derived from primary-grown *Saccharomyces cerevisiae*. Engevita® products are characterized by a mild to nutty or toasted savory flavor profile with enhancement properties. Engevita® helps to improve savory profile and texture, providing nutritional value at the same time. The Engevita® range of premium nutritional yeast naturally contains B-complex vitamins, minerals, and microelements.

GLUTEN FREE	PRODUCT	DESCRIPTION
	Engevita® Bland*	Mild bready and nutty flavor
	Engevita® Toasted*	Mild toasted and savory flavor
	Engevita® GSH	Nutty, roasted flavor, and kokumi taste
	Engevita® HiPRO	With high protein content (>55%) and pleasant mild taste, it is a very versatile ingredient, also suitable for vegan and vegetarian applications, both with nutritional and functional benefits
	Engevita® Vegevita flakes	Source of vitamin B12 and other B-complex vitamins
	Engevita® Vege Regime*	Source of vitamin B12 and other B-complex vitamins
 	Bio-Engevita*	Mild bready and nutty flavor, organic certified in EU with USDA organic equivalence

\*Available in flakes

These powder products are non-GMO, gluten-free, clean label, kosher and halal. We offer a range of Non-GMO Project Verified products. Other Engevita® products can be offered, depending on your application(s) and savory requirements.

Discover inspiring recipes







## Lalvita™

Lalvita™ inactive, whole-cell yeast products are derived from primary grown baker's/brewer's yeast or other edible yeast. They are used in many applications for their nutritional value benefits, their savory flavor profile contribution, as well as for their texture-optimization properties. They promote texture and help accentuating mouthfeel while imparting emulsification properties. Additionally, they naturally contain a significant amount of protein, fiber, and B-vitamin complex to improve nutritional benefits in food applications.

PRODUCT	DESCRIPTION
Lalvita™ 2130/2133	Baker's yeast. Bready, nutty, toasted instead flavor
Lalvita™ 2121	Baker's yeast mini flakes. Mild, roasted flavor
Lalvita™ 2190	Baker's yeast with enhanced emulsifying properties, it is conceived to support phosphate-free meat applications
Lalvita™ 2245	Brewer's yeast. Strong inherent beer flavor
Lalvita™ T31	Light bitter, savory, and roasted flavor, naturally contains high-quality proteins and B-complex vitamins

These powder products are non-GMO, clean label, kosher and halal. Contact us to confirm the halal certification and the allergen status of the product(s) of interest. Other products can be offered, depending on your application(s) and savory requirements.

Discover inspiring recipes



Learn more about the Lalvita™ brand





## Lyfe®

### Lyfe® yeast extracts and autolyzed yeast

Yeast extracts and autolyzed yeast portfolio, which, just like seasonings, help to improve taste, but also bring out and balance flavors in food products. We present them in product “families” with distinctive characteristics: High-Lyfe®, Prime-Lyfe®, Intense-Lyfe®, Savor-Lyfe®, Whole-Lyfe®. Cell-Lyfe® identifies yeast cell walls. Organic yeast extracts are also available – check out our Bio-Lyfe® range.

### High-Lyfe®

High-Lyfe® yeast extracts are derived from primary-grown *Saccharomyces cerevisiae*. They contain a natural source of 5'-IMP and 5'-GMP nucleotides that bring out umami taste in foods. The High-Lyfe® yeast extract products help in bringing out taste and rounding off sharp flavor notes. These products can be used in a wide range of applications and in conjunction with other yeast extracts. Additionally, the lower salt versions of High-Lyfe® yeast extract can be used in reduced-sodium food applications.

### Prime-Lyfe®

Prime-Lyfe® yeast extracts are derived from primary-grown *Saccharomyces cerevisiae*. They are light in color and designed to add mild savory background flavor notes in foods. The functionality and versatility of these yeast extracts can help create savory taste bases, promoting meaty flavors and accentuating vegetable flavors. These products can be used in broths, bouillons, soups, sauces, or spice blends. They can be used at low concentrations in non-savory or creamy applications







### **Intense-Lyfe®**

Intense-Lyfe® yeast extracts are derived from primary-grown *Saccharomyces cerevisiae*. They generate beefy, meaty, roasted flavor notes. These products provide a dark color for bouillons, soups, and sauce bases, as well as roasted flavor for savory applications.

### **Savor-Lyfe®**

Savor-Lyfe® yeast extracts and flavors are derived from primary-grown *Saccharomyces cerevisiae*. They help to promote specific flavors and bring out or complement existing notes in all types of savory foods. These products are ideal for foods requiring roasted-notes enhancement, such as roasted beef or chicken. They can be used in a wide range of applications and in conjunction with other yeast extracts.



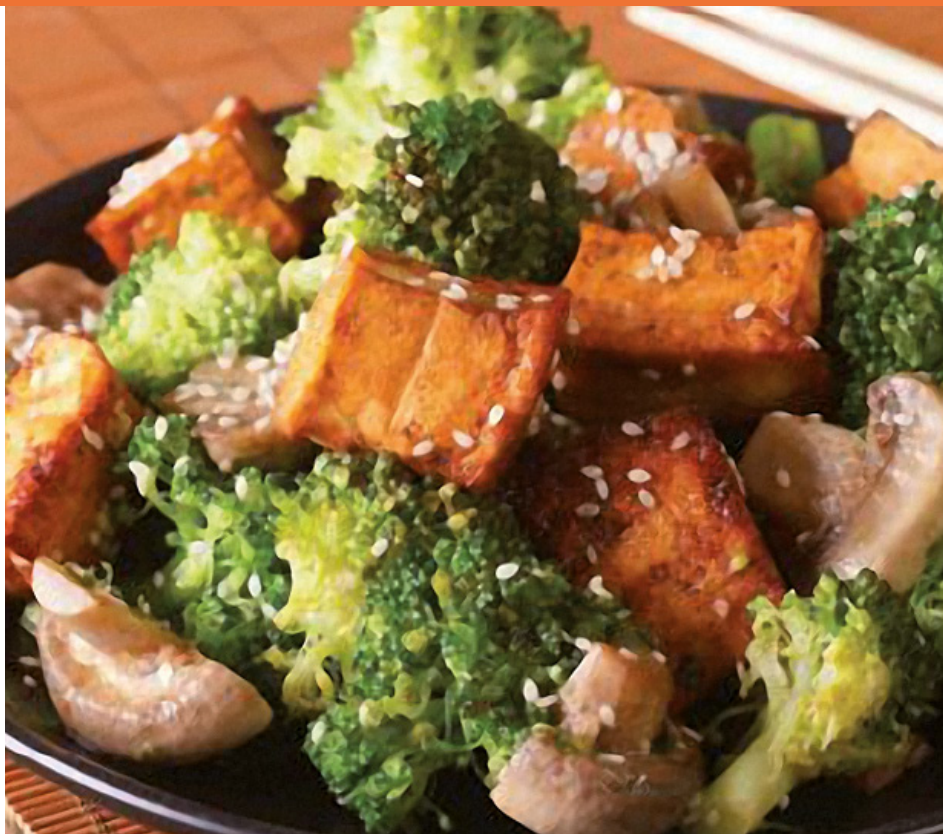
## **Yeast Autolysates**

### **Whole-Lyfe®**

Whole-Lyfe® products are developed from primary and/or brewer's whole-cell yeast. Autolyzed whole-cell yeast helps to improve savory taste and mouthfeel in foods. They also improve texture in low-sodium meat processing applications.

**Learn more about the portfolio and  
discover inspiring recipes**





## Plant-based food

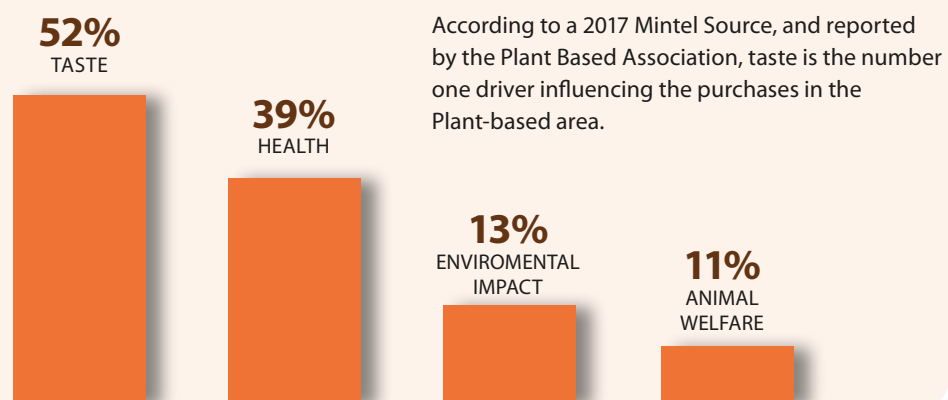
We are closely following the plant-based market and focusing on flavor solutions for plant-based meals: our yeast-based ingredients are an excellent foundation for the creation of animal-free foods and help to bridge the gaps between animal and plant-based meals. Looking in-depth into our portfolio, we can highlight different areas where we are able to support our customers to innovate and promote delicious plant-based meals. Let your customers enjoy the tasty solutions provided by Lallemand Bio-Ingredients – Savory. Suitable for plant-based, recommended for all mouthwatering preparations!

### HIGHLIGHT

Suggest to specify:

- Masking of undesired notes from vegan protein
- Rounding-up taste
- Flavor directions
- Dietary complements

### INFO



Source: Mintel, 2017



„it's plant-based“ and taste delicious!





## Savor-Lyfe®

The Savor-Lyfe® product range includes yeast extracts and yeast-based flavoring ingredients with a well-defined flavor impact, suitable for all kinds of savory food preparation and key to build the taste foundation of plant-based meals – or simply to add that tasty touch!

**Savor-Lyfe® BEC** is a yeast extract with a taste similar to that of a meat bouillon, without containing any ingredients of animal origin.

**Savor-Lyfe® CB** has a strongly enhanced umami perception, while its chicken flavour is characterized by a pronounced and “authentic” taste sensation.

**Savor-Lyfe® FB** is an allergen-free light beige powder with a characteristic umami, sweet base note of boiled fish, and a long-lasting taste.

**Savor-Lyfe® SSC** is an allergen-free light brown powder with a characteristic umami, savory impact, and the classic soy sauce flavor notes.

**Our solutions for plant-based nutrition**



**Learn more about Savor-Lyfe®**



## Bakon®

Bakon® is synonymous with traditionally smoked torula yeast! Manufactured through a unique process, this range of ingredients adds umami and smoky flavor notes to different food applications.

### HIGHLIGHT

Add Bakon® Memphis Style genuine BBQ profile to your plant-based application

**Discover inspiring recipes**



**Learn more about our solutions for plant-based food**



## INFO

### SAVOR-LYFE® CB RECOMMENDED DOSAGES

The indication is on the final product RTE

<b>Vegan nuggets:</b>	<b>0,1–0,3%</b>
<b>Soups/stocks:</b>	<b>0,05–0,1%</b>
<b>Snacks:</b>	<b>0,05–0,15%</b>
<b>Sausages/ham:</b>	<b>0,1–0,2%</b>



## Clean label

Clean label is not a scientific term, but rest assured it is very well known in the industry. It is a consumer term that has been broadly accepted by the food industry, consumers, academics, and even regulatory agencies. Despite rises and falls of various trends in the food industry, “clean label” is definitely a stable one. We can consider it as the “new norm” for meal manufacturing. Essentially, clean label means making a product using as few ingredients as possible, making sure those ingredients are items that consumers recognize and think of as wholesome – ingredients that consumers might use at home. Clean label seeks out foods with easy-to-recognize ingredients and no artificial ingredients or synthetic chemicals, and the term has become associated with trust among food manufacturers.

### How to avoid phosphates?

#### Lalvita™ 2190 and Toravita® 033 can play a role!

The combination of selected inactive yeast (such as Lalvita™ 2190 and Toravita® 033) with specific process optimization can allow the successful substitution of phosphates in emulsified meat products and other types of processed meat.

Lalvita™ 2190 and Toravita® 033, at indicative dosage of 0.5-0.7% in finished products, allow water, the color stabilization and flavor enhancement in emulsified sausages, deli hams, and other processed meat.

## INFO

### Processed meat – a barrier?

If we consider meat products, their processed image can be a purchase barrier for many consumers. As a result, brands are committing to cleaner labels by removing additives and preservatives, artificial ingredients, hormones, antibiotics, etc. Lallemand Bio-Ingredients – Savory’s yeast-based solutions offer an excellent innovation opportunity.





## Sodium reduction, a healthy-living challenge for the food industry

Sodium chloride plays multiple important roles in food preparation. For centuries, salt has been used as an ingredient for food preservation. Furthermore, salt can interact with proteins and modify their texture. However, what we all appreciate is the flavor it provides to our meals, helping to bring out the full flavor of all ingredients. Unfortunately, several studies demonstrate that an excessive sodium intake is associated with multiple human health risks, including hypertension, cardiovascular diseases, and increased risk of stroke. Food manufacturers are actively working to supply sodium-reduced foods products. Sadly, results are often less appetizing in comparison to the full sodium version. Lallemand Bio-Ingredients – Savory’s yeast-based ingredients offer a variety of solutions to maintain the full flavor we desire – along with reduced sodium levels.

Target sodium reduction without compromising on taste.



### Our application favorites

#### **Toravita® 028 SD and 029 SD**

Toravita® 028 and 029 SD are exclusive, low-sodium yeast autolysates that add a “salty” flavor without adding substantial sodium. The co-processed combination of ammonium chloride (028 SD), potassium chloride (029 SD), and torula are significantly less bitter than sodium alternatives alone. They also provide the flavor-enhancement characteristics common to all of our autolyzed yeast products.

#### **Toravita® 054**

Toravita® 054 is the most recently developed product, a clean-label, natural yeast ingredient able to round up the taste of your food preparation, thanks to the natural content of nucleotides and other flavor donors, responsible for the delicious umami taste.

### **HIGHLIGHT**

A small percentage of Toravita® 054 boosts and rounds existing flavors!

#### **The Lyfe® portfolio**

Yeast extracts rich in protein, the ones containing free amino acids, glutathione, or other compounds relevant for the flavor contribution, such as nucleotides, can balance and round-up the flavor profile.

High-Lyfe® 530 A, High-Lyfe® 562 A, and High-Lyfe® 566 A are effective options for sodium reduction.



## LALLEMAND BIO-INGREDIENTS – SAVORY

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LALLEMAND BIO-INGREDIENTS

