

# Roquette Proteins for Lactobacillus

**Roquette** Customer Technical Service (CTS) has generated the **following formulation recommendation** for **Lactobacillus fermentation**. Using a combination of HTS Mixture DOE, statistical modeling, and stirred tank validation, the recommended formulation includes a combination of **NUTRALYS® H85** and **SOLULYS®**.

**SOLULYS®** is a unique vegetable-based protein extract valued for its nitrogen and critical growth-factor content. **NUTRALYS® H85** is our hydrolyzed pea protein isolate often used as an organic nitrogen source **replacement for traditional protein sources like soy and casein**. **SOLULYS®** and **NUTRALYS® H85** provide amino acids, peptides, vitamins, and trace elements essential to the growth and productivity of Lactobacillus.

## HOW TO USE?

Calculate the total nitrogen (Nt) from organic material in the current formulation and fully replace with 1.5x Nt from a ratio of 60% N from SOLULYS® and 40% N from NUTRALYS® H85. See example below



**Despite an increase in total organic material, the recommended formulation results in a significant cost savings (see example below).**

	Formula (g/L)	Product TN%	Formula Nt (g/L)	Product Ratio (Nt)	Loading Factor (Nt)	\$/kg Raw Material	\$/kg Formula
Yeast Extract	21.6	12%	2.58			\$8.00	\$7.10
Soy Peptone	2.7	15.4%	0.42			\$15.00	\$1.68
			3.00				\$8.78
SOLULYS® 095K	34.6	7.8%	2.70	0.60	1.5	\$2.75	\$1.93
NUTRALYS® H85	14.8	12.2%	1.80	0.40	1.5	\$10.00	\$3.00
			4.50				\$4.93

## OUR ADVANTAGES

### PRICE - PERFORMANCE

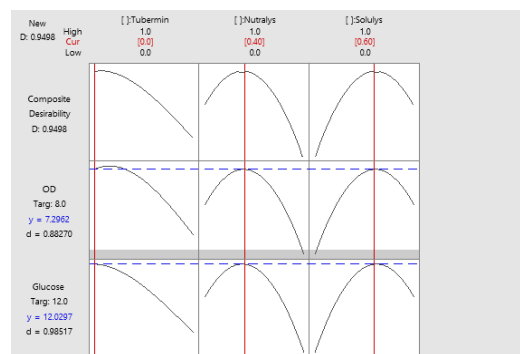
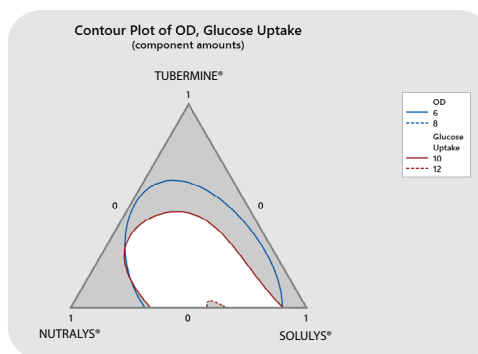
- Expected performance at a cost savings

### QUALITY PLANT-BASED PRODUCT

# ROQUETTE Proteins for Lactobacillus

	NUTRALYS® H85	SOLULYS® 048	SOLULYS® 095
Appereance	Off-white Powder	Thick Brown Liquid	Brown/Yellow Powder
Loss on drying	8% max.	~50%	~5%
Total Nitrogen	~12-14%	~7.1% (dry matter)	~7.8%
Total AA	~100 g / 100 g	~36 g / 100g	~42 g / 100g
Protein (Nx6.25)	76% min.	45%	48%
pH in solution	7 approx.	4 approx.	4.2 approx.

## STATISTICAL MODELING



**Statistical modeling:** The contour plot (above-left) shows how the component proportions impact growth and glucose uptake. The highest growth and uptake is the area within the dotted line and identifies a blend of **SOLULYS®** and **NUTRALYS®** as the preferred protein mixture. The optimization plot (above-right) helps to identify the specific component proportions needed to achieve the desired effect. The model results were used to design confirmation studies in bioreactors.

**Stirred Tank Data:** Small volume stirred tank reactors were run in duplicate to confirm the performance of **SOLULYS®** and **NUTRALYS®** as compared to the industrial standard. Viable cell counts (below-left) and glucose uptake (below-right) are some of the measurables used to evaluate performance and confirmed an equivalent or improved response on the **SOLULYS®** and **NUTRALYS®** blend.

## 250mL STIRRED TANK DATA

