“フレッシュでモダンな白ワインと赤ワインを生産するための新しいバイオテクノロジーツール”

OENOBRANDS®

ADVANCED WINEMAKING SOLUTIONS

Yamanashi May 29th 2025

Michikatsu SATO, Ph.D

Antonio Álamo Aroca / Area & Brand Manager

OENOBRANDS®

MISSION

Oenobrands designs and markets oenological products. Its permanent innovation strategy allows for the creation of solutions that answer to the ambitions and desires of winemakers, wine traders and consumers.

ORIGIN

Oenobrands was born from the joint venture between DSM Food Specialties and Anchor Oenology, in 2010.

DSM
BRIGHT SCIENCE. BRIGHTER LIVING.

Anchor
OENOLOGY
Dedicated to fermentation excellence

PORTFOLIO

YEAST

ENZYMES

WINEMAKING AIDS

BACTERIA

MANNOPROTEINS

BRANDS

- Anchor OENOLOGY — Dedicated to fermentation excellence
- NATUferm®
- RAPIDASE® — HIGH SPEED ENZYMES SINCE 1922
- MAXAferm®
- Fermivin®
- MaLOFerm
- In-Line Ready®
- FINALtouch® — WINE PERFECTION
- EXTRAferm®
- Claristar®

PARTNERS IN SCIENCE

FRANCIA

- INRA — SCIENCE & IMPACT — INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE
- Sciences pour l'œnologie
- cnrs
- R INTER RHÔNE
- IFV — INSTITUT FRANÇAIS DE LA VIGNE ET DU VIN
- BNIC COGNAC FRANCE — B.N.I.C. - BUREAU NATIONAL INTERPROFESSIONNEL DU COGNAC
- Centre de Recherche Viticole de Corse
- uB — UNIVERSITÉ DE BOURGOGNE — I.U.V.V. - INSTITUT UNIVERSITAIRE DE LA VIGNE ET DU VIN « JULES GUYOT »
- ondalys

ESPAÑA

- VITEC CENTRE TECNOLÒGIC DEL VI
- laae — Laboratorio de Análisis de Aroma y Enología
- POLITÉCNICA — UNIVERSIDAD POLITÉCNICA DE MADRID

ITALIA

- crea
- FONDAZIONE EDMUND MACH
- AMPELIDEA — WINE MAKING
- ENOLAB DI DARIO MONTAGNANI - SERVICE OF ANALYSIS AND ENOLOGICAL CONSULTING

AUSTRALIA

- The Australian Wine Research Institute

CHILE

- dictuc

URUGUAY

- Área Enología y Biotecnología de Fermentaciones

SUDÁFRICA

- UNIVERSITEIT STELLENBOSCH UNIVERSITY
- Institute for Wine Biotechnology — STELLENBOSCH UNIVERSITY

INDEX

YEAST

Anchor OENOLOGY

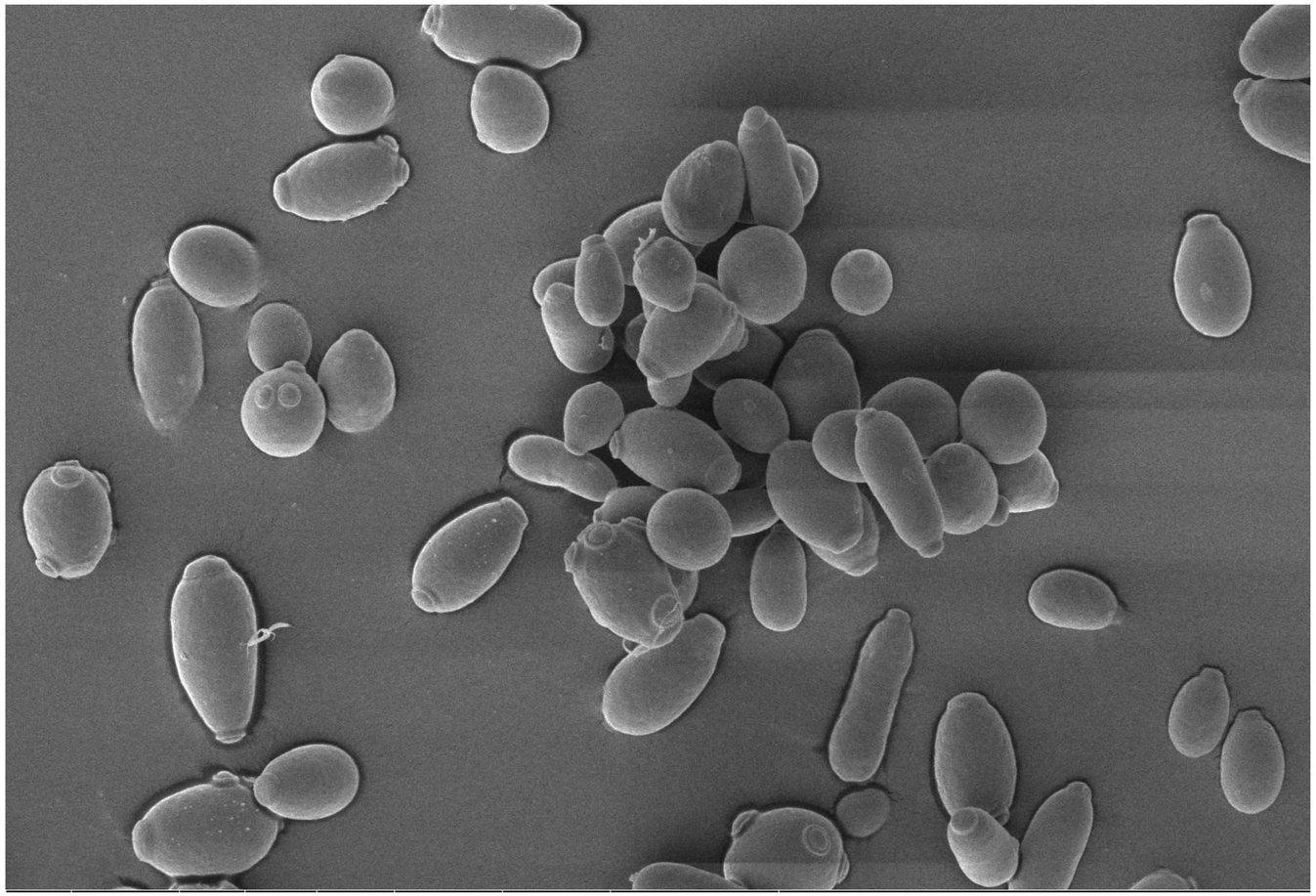
発酵の卓越性に捧げる

ANCHOR THIOLBLOOM

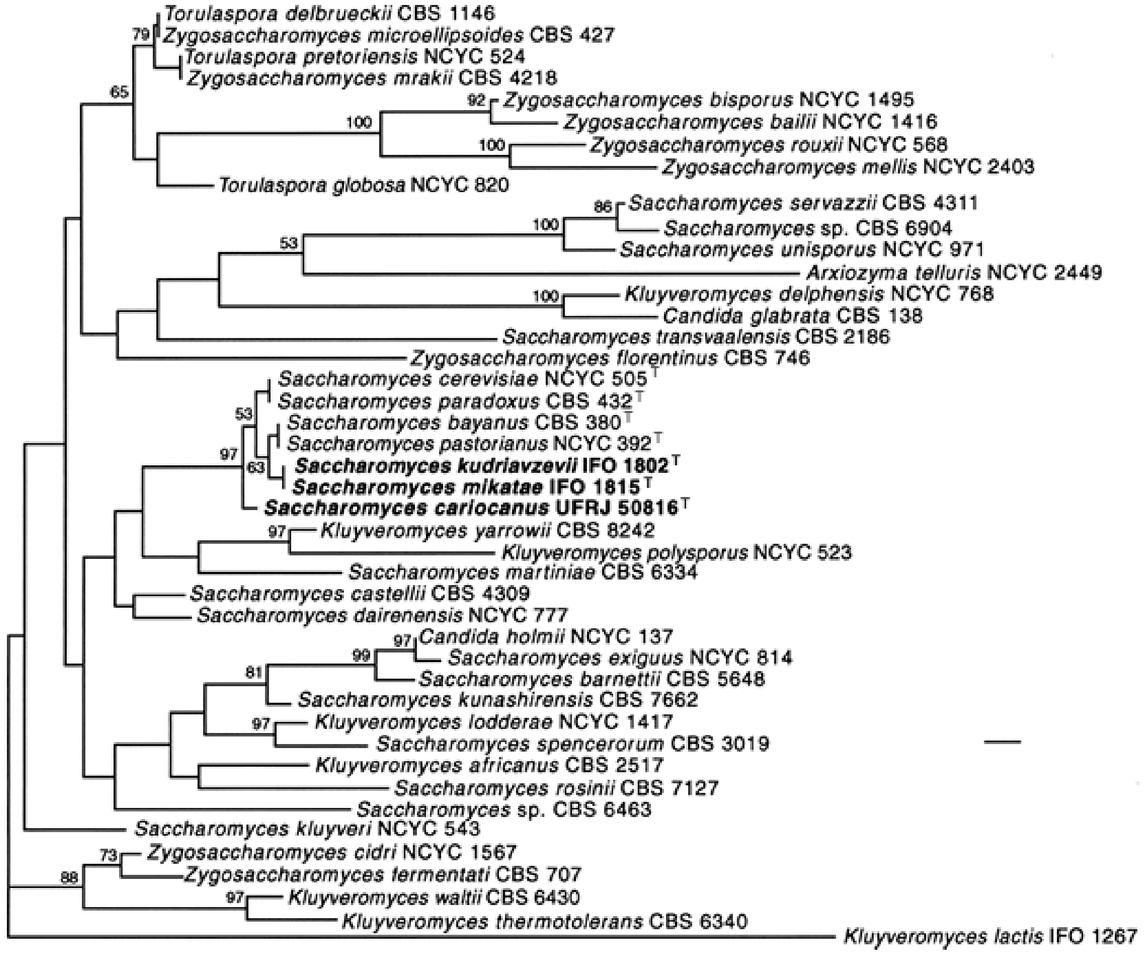
- *Saccharomyces cerevisiae* x ***S. kudriavzevii* ハイブリッド株**
- 主要なチオール化合物を強化 (3MH, 3MHA, 4MMP)
- 強化
  - 新鮮な果実味
  - 柔らかさとボリューム
- 飲みやすく、早くリリースされるワイン
- 白ワイン

チオール, フレッシュでフルーティーなアロマ

- Saccharomyces *cerevisiae* x ***S. kudriavzevii*** ハイブリッド株



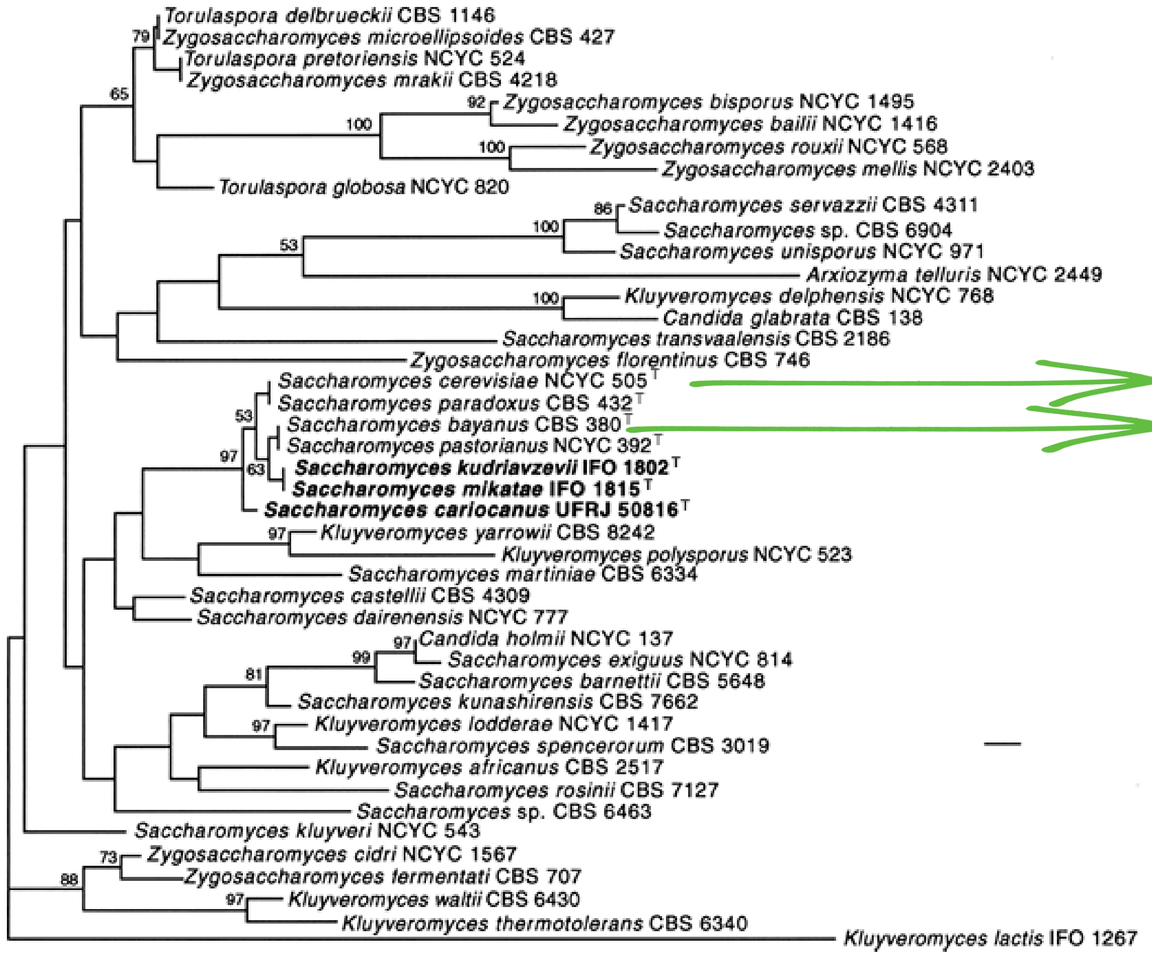
- *Saccharomyces cerevisiae* x ***S. kudriavzevii*** ハイブリッド株



Dendrogram showing the phylogenetic relationship of strains IFO 1802T, IFO 1815T and UFRJ 50816T to other Saccharomyces and non-Saccharomyces species

Naumov et al. 2000
https://www.microbiologyresearch.org/docserver/fulltext/ijsem/50/5/0501931a.pdf?expires=1747556891&id=id&accname=guest&checksum=D9A26E4A195A1F245BA17414B1FB103B

- *Saccharomyces cerevisiae* x ***S. kudriavzevii*** ハイブリッド株

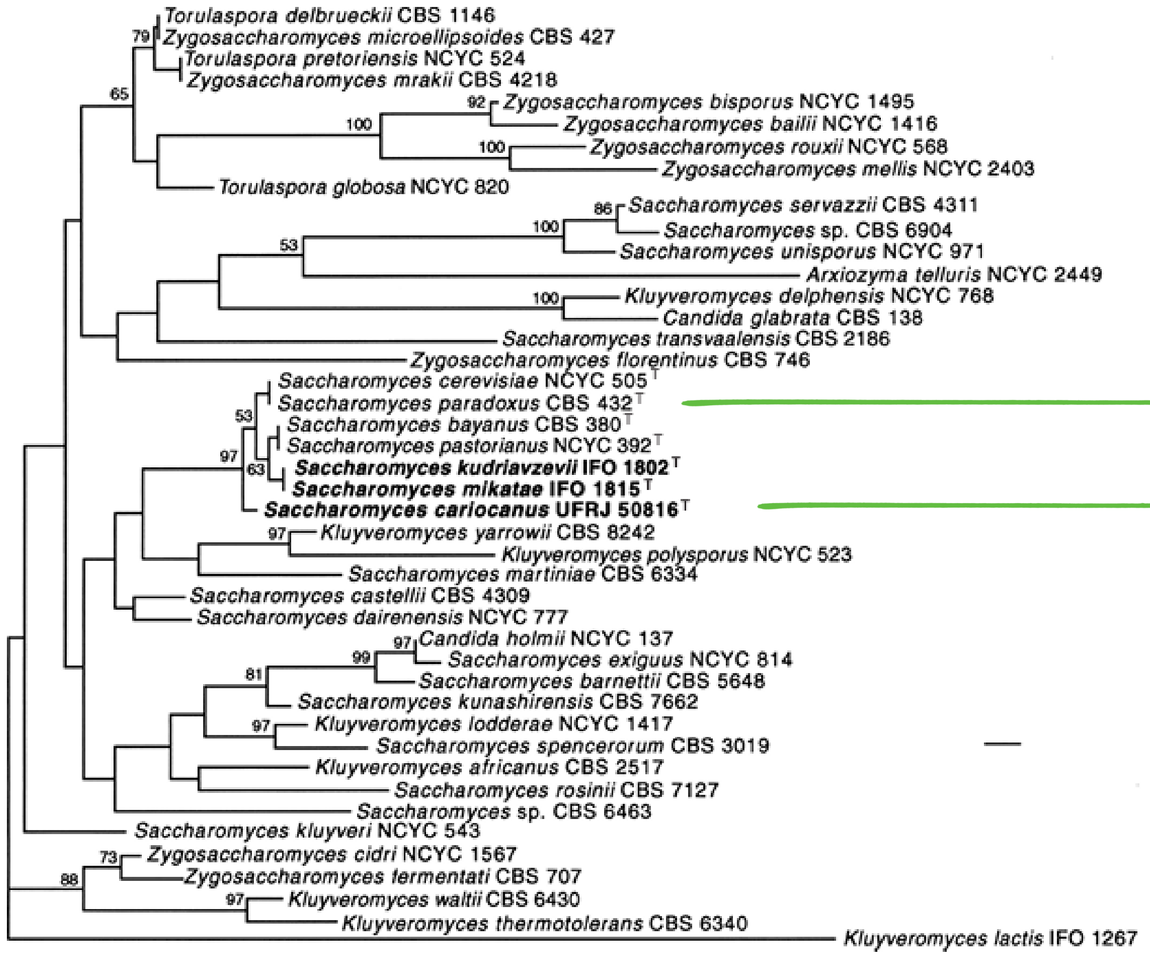


Saccharomyces cerevisiae x
Saccharomyces bayanus
Anchor inter-species **hybrids**

Dendrogram showing the phylogenetic relationship of strains IFO 1802T, IFO 1815T and UFRJ 50816T to other Saccharomyces and non-Saccharomyces species

Naumov et al. 2000
https://www.microbiologyresearch.org/docserver/fulltext/ijsem/50/5/0501931a.pdf?expires=1747556891&id=id&accname=guest&checksum=D9A26E4A195A1F245BA17414B1FB103B

- *Saccharomyces cerevisiae* x ***S. kudriavzevii*** ハイブリッド株



Saccharomyces cerevisiae x
Saccharomyces paradoxus and cariocanus
***Anchor intra-species* hybrids**

Dendrogram showing the phylogenetic relationship of strains IFO 1802T, IFO 1815T and UFRJ 50816T to other Saccharomyces and non-Saccharomyces species

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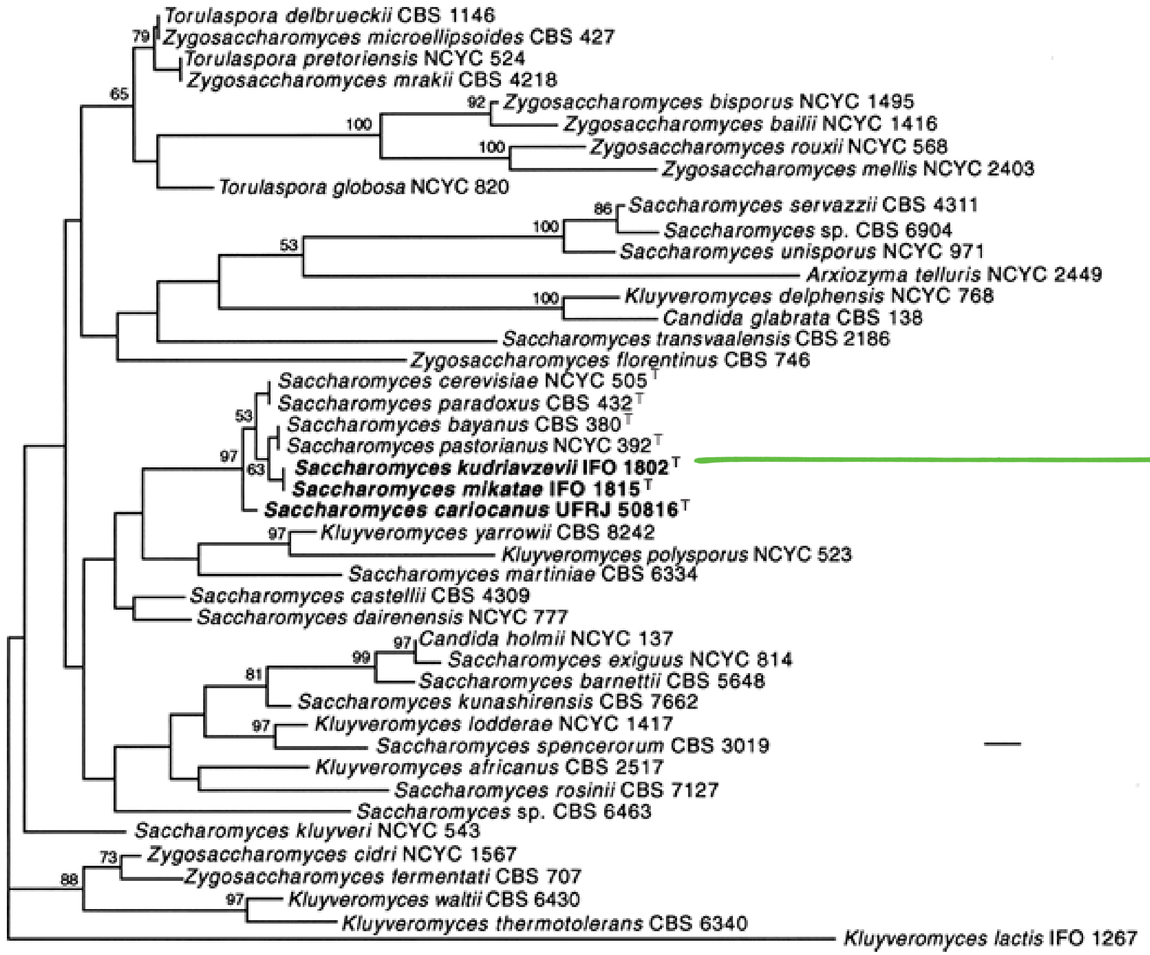
- *Saccharomyces cerevisiae* x ***S. kudriavzevii*** ハイブリッド株



Saccharomyces cerevisiae x
Saccharomyces kudriavzevii
***Anchor inter-species* hybrids**

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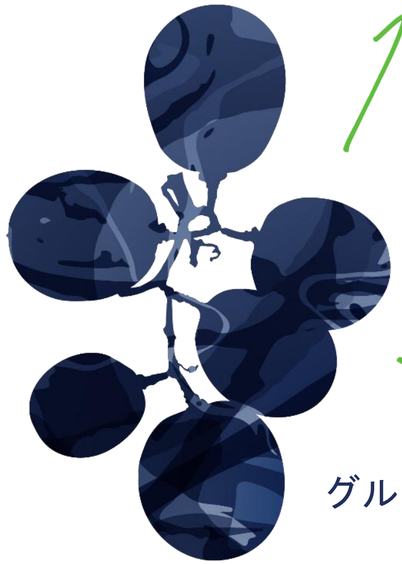
アロマ酵母の代謝



グリコシル化前駆体 → モノテルペン

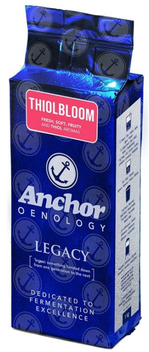
Cys-/Glu-共有前駆体 → チオール

アミノ酸 → 亜硫酸塩

アミノ酸 → 高級アルコール

グルコース/フラクトース

ピルビン酸 → エタノール → 酢酸エステル



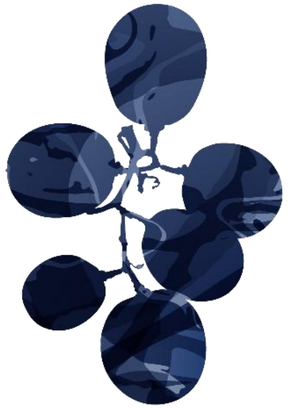
エタノール → エチルエステル

脂肪酸

ジアセチル

α-アセト乳酸 ← アセトアルデヒド → アセテート → アセチル-CoA

チオール酵母の代謝



ブドウ
Cys-/Glu-共有前駆体

酵母による取り込み
酵母内のトランスポートと切断

遊離

知覚閾値
0.8 ng/L

4-MMP

ツゲ, ブラックカラント

遊離

知覚閾値
60 ng/L

3-MH

グレープフルーツ

変換

知覚閾値
4 ng/L

3-MHA

パッションフルーツ

チオール酵母の代謝

変換

3-MH
60 ng/L

グレープフルーツ

3-MHA
4 ng/L

パッションフルーツ

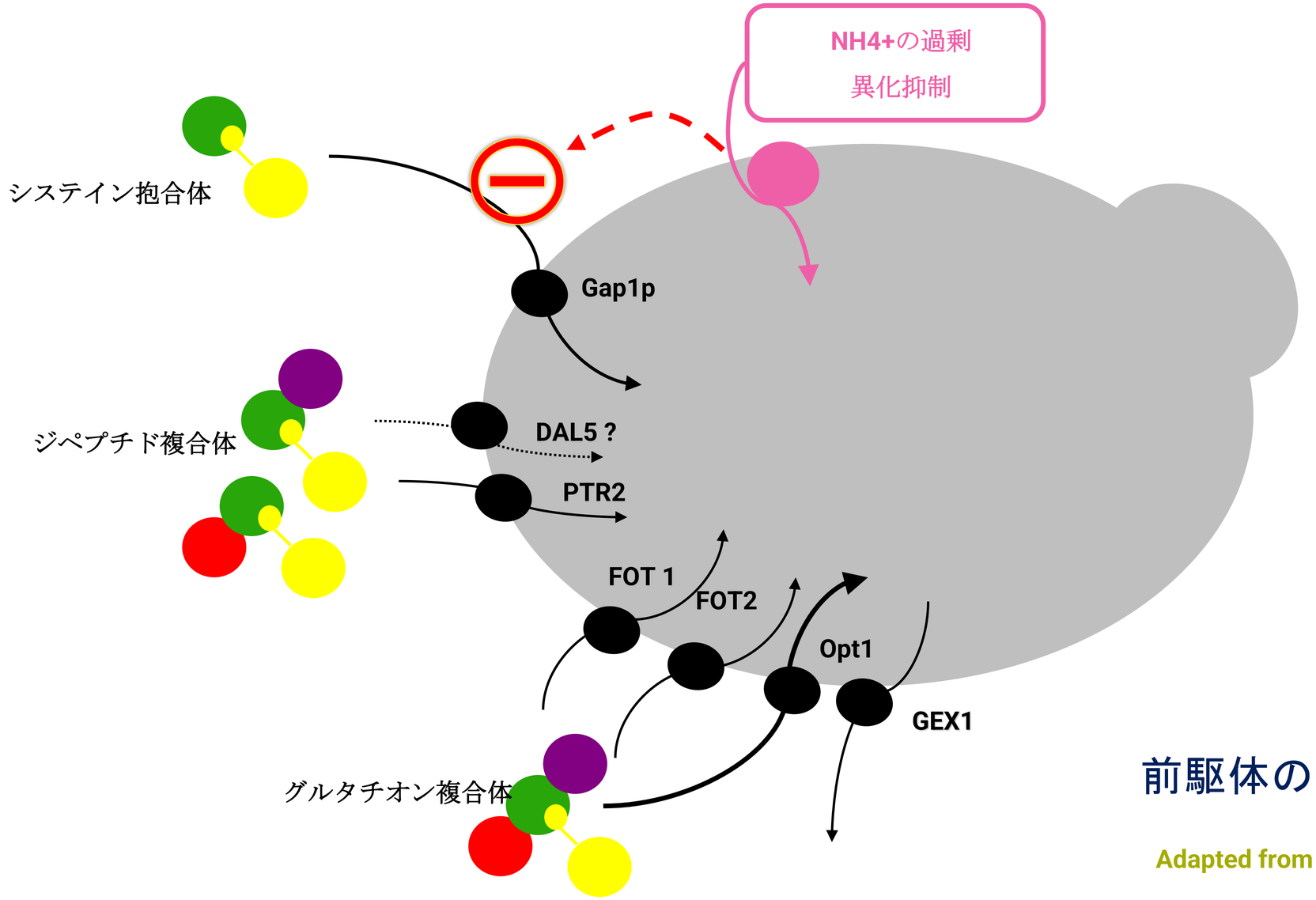
→ パッションフルーツなど、よりトロピカルな香りへのプロファイルの変更

→強度の増幅

→ 3MHA 15 倍パワフル

x 20

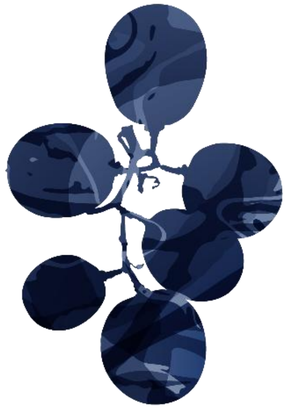
チオール酵母の代謝



前駆体の輸送：最新技術

Adapted from Cordente et al., 2015

ANCHOR チオール酵母の代謝



ブドウ
Cys-/Glu-共有前駆体

酵母による取り込み
酵母内のトランスポートと切断

遊離

遊離

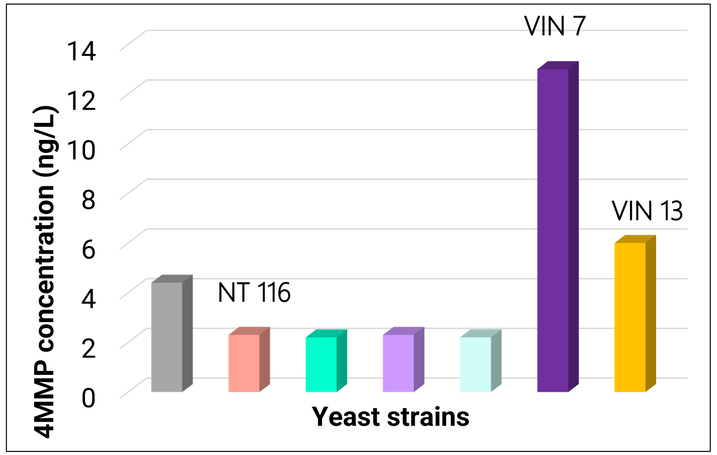
知覚閾値
0.8 ng/L

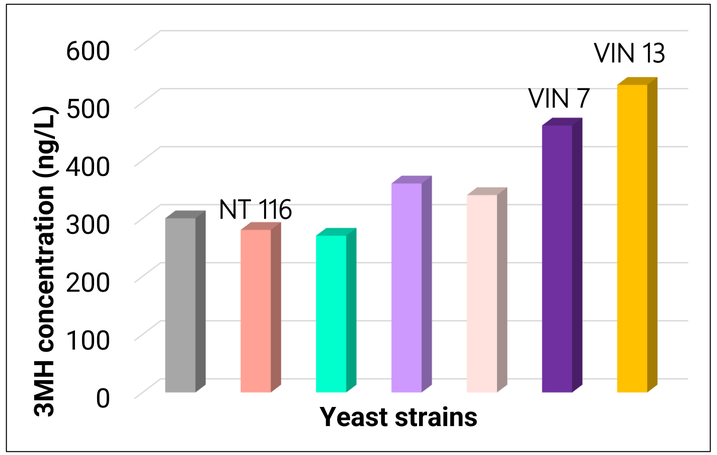
4-MMP

知覚閾値
60 ng/L

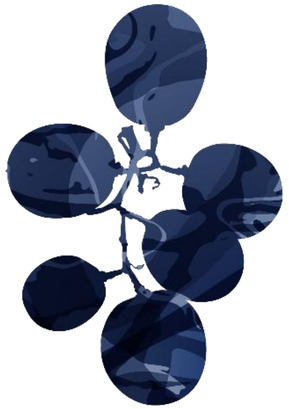
3-MH

グレープフルーツ





ANCHOR



ブドウ
Cys-/Glu-共有前駆体

酵母による取り込み
酵母内のトランスポートと切断

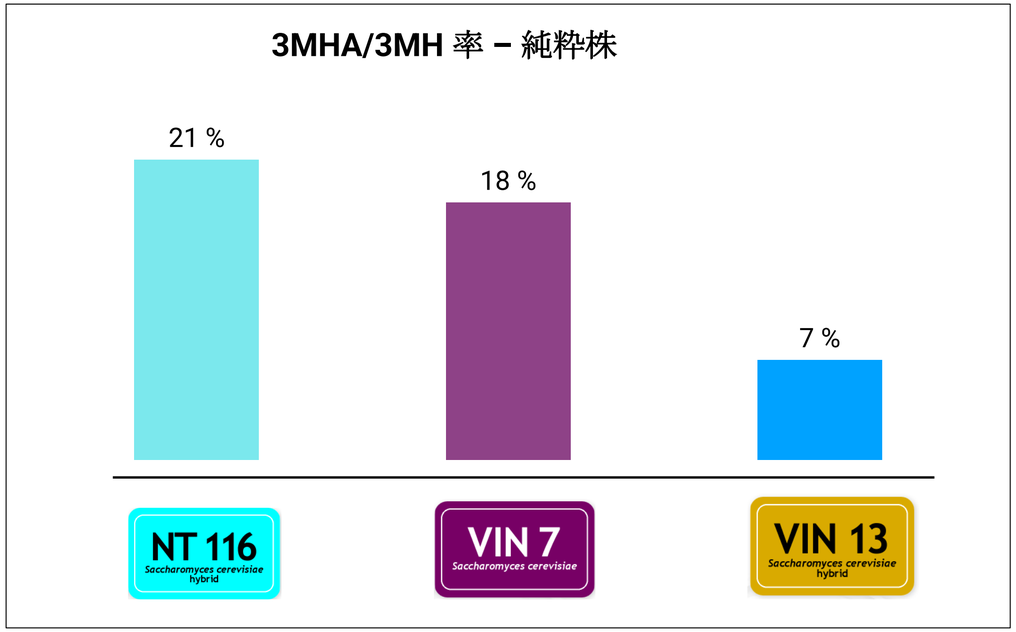
遊離

知覚閾値
60 ng/L
3-MH

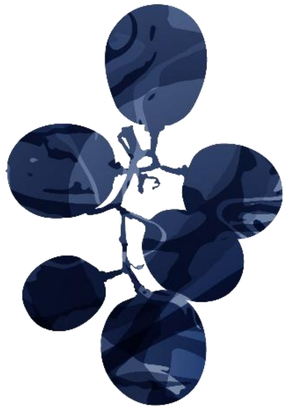
グレープフルーツ

知覚閾値
4 ng/L
3-MHA

パッションフルーツ



ANCHOR チオール酵母の代謝



ブドウ
Cys-/Glu-共有前駆体

酵母による取り込み
酵母内のトランスポートと切断

遊離

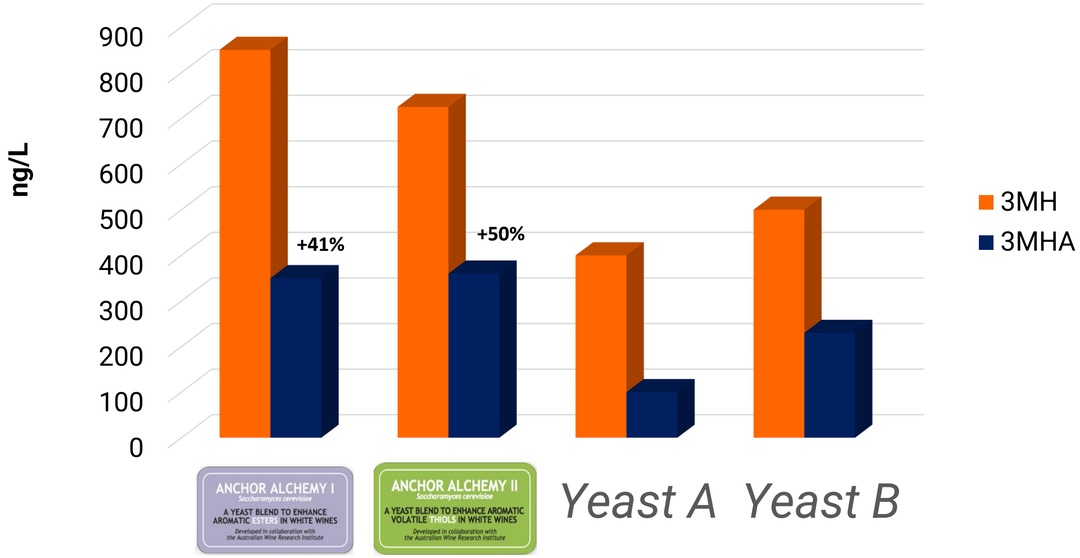
知覚閾値
60 ng/L
3-MH

グレープフルーツ

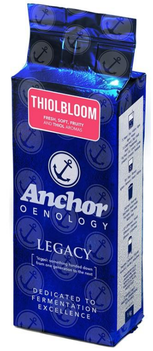
知覚閾値
4 ng/L
3-MHA

パッションフルーツ

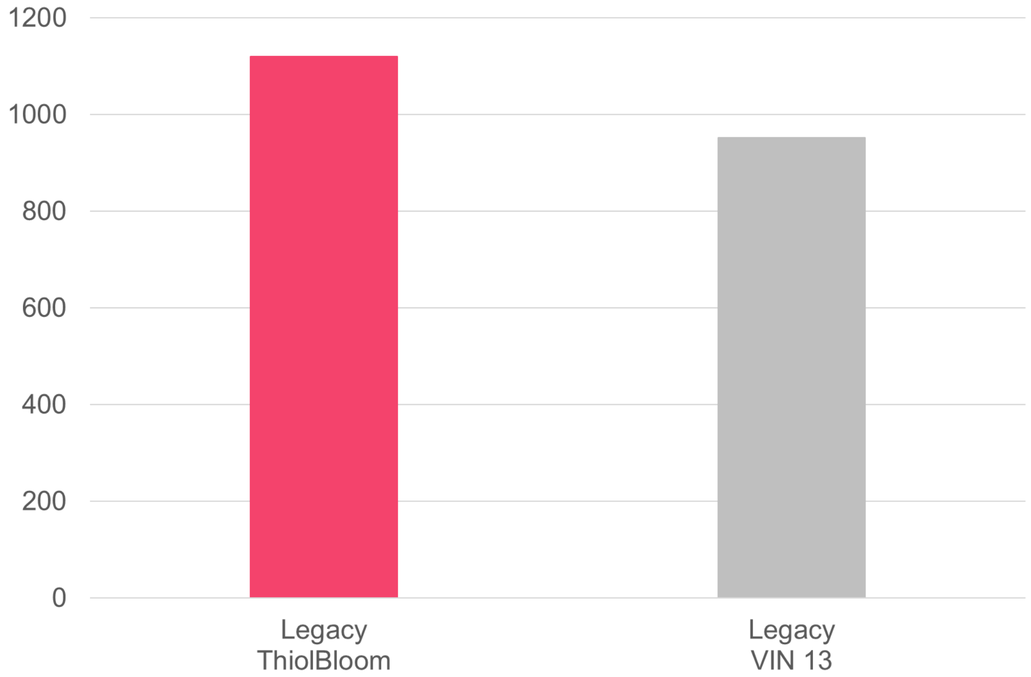
3MH と 3MHA – 酵母ブレンド



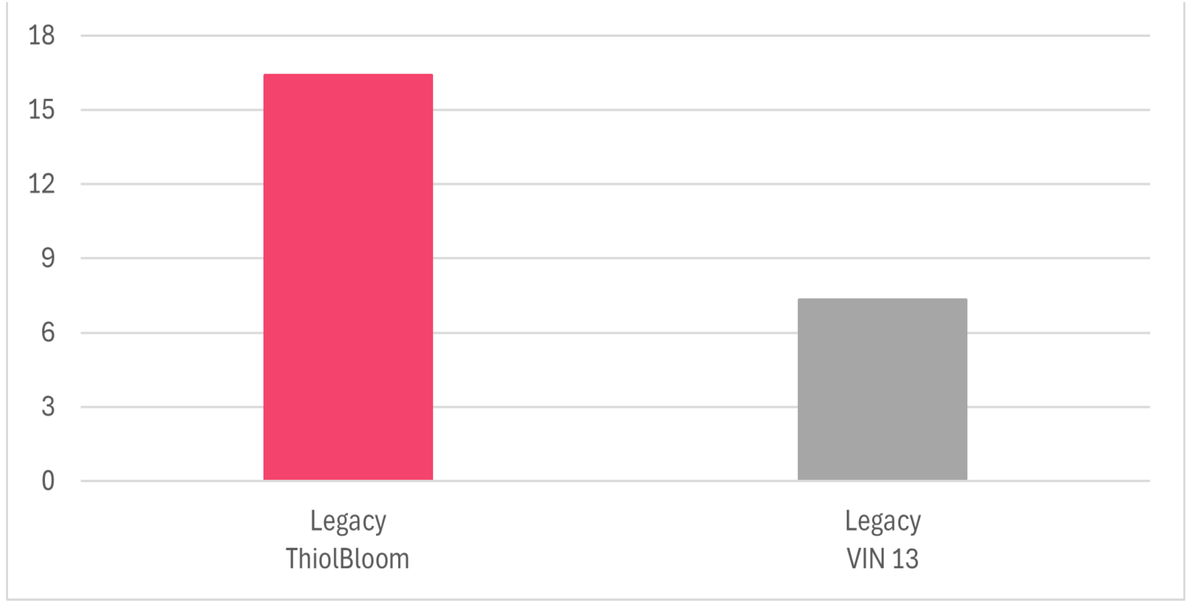
チオール生成



NEW



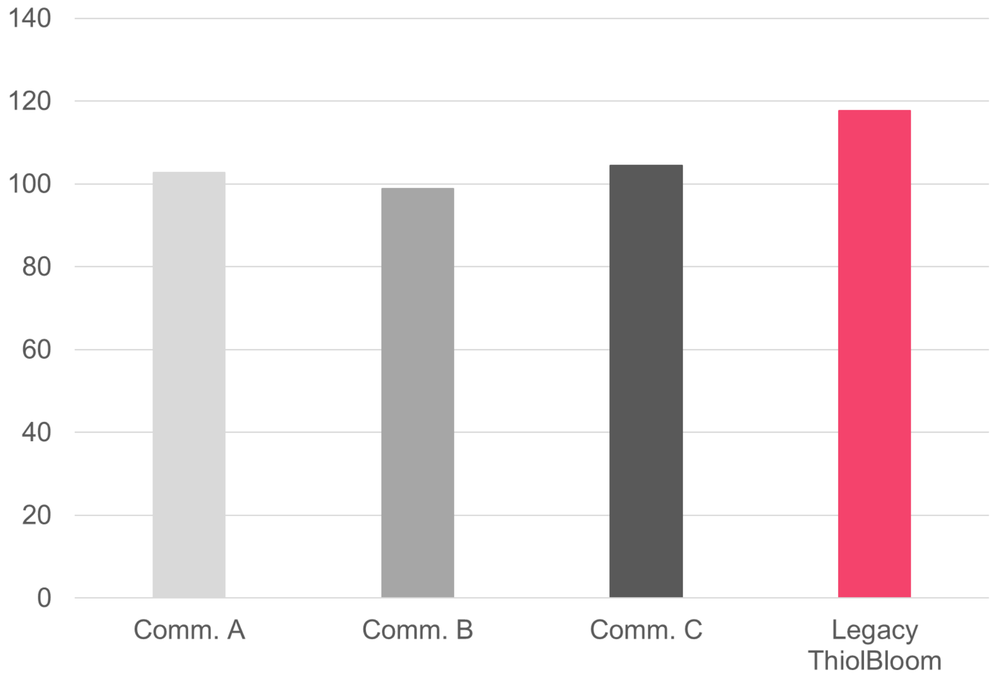
新しいLegacy ThiolBloom とLegacy VIN 13 による3MH (ng/L) (グレープフルーツ, 柑橘類とパッションフルーツ) 生成量の比較.
官能閾値3MH: 60 ng/L.



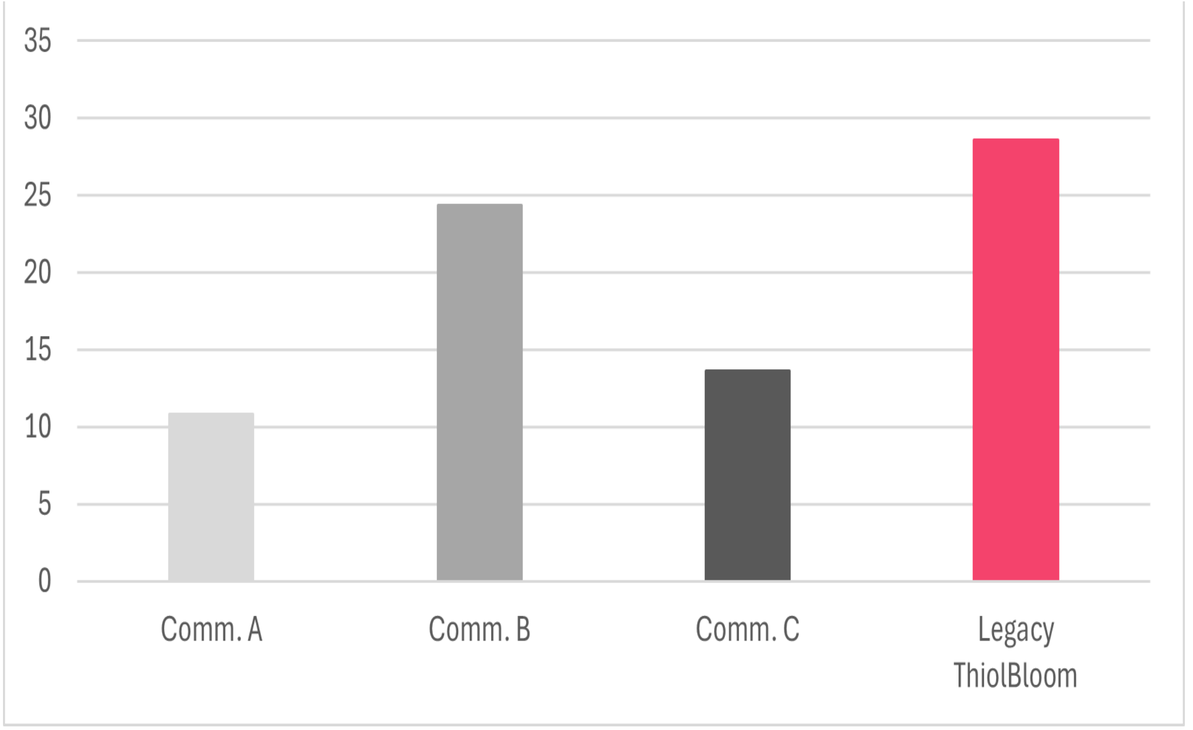
新しいLegacy ThiolBloom とLegacy VIN 13 による 4MMP (ng/L) (ツゲ, ブラックカラントとグーズベリー) 生成量の比較.
官能閾値 4MMP: 0,8 ng/L.

チオール生成

NEW



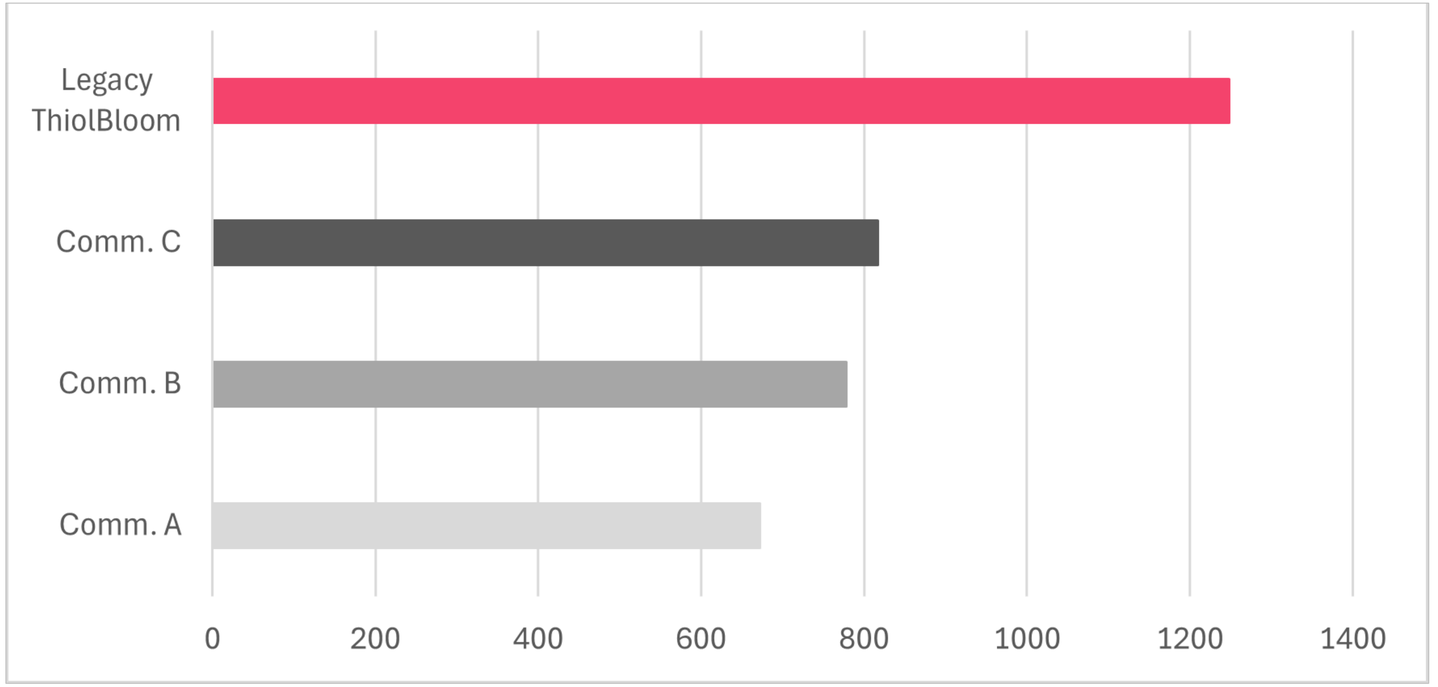
新しいLegacy ThiolBloom と他の酵母 による3MHA (ng/L) (グレープフルーツ, 柑橘類とパッションフルーツ) 生成量の比較.
官能閾値3MHA: 4 ng/L .



新しいLegacy ThiolBloom と他の酵母 による 4MMP (ng/L) (ツゲ, ブラックカラントとグーズベリー) 生成量の比較.
官能閾値 4MMP: 0,8 ng/L.

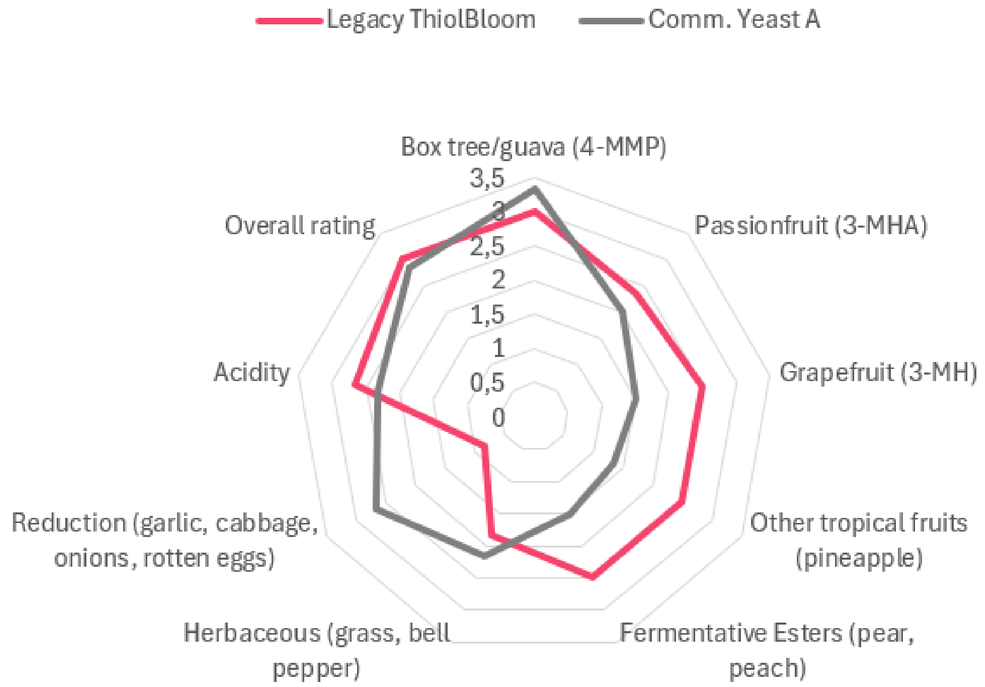
チオール生成

NEW



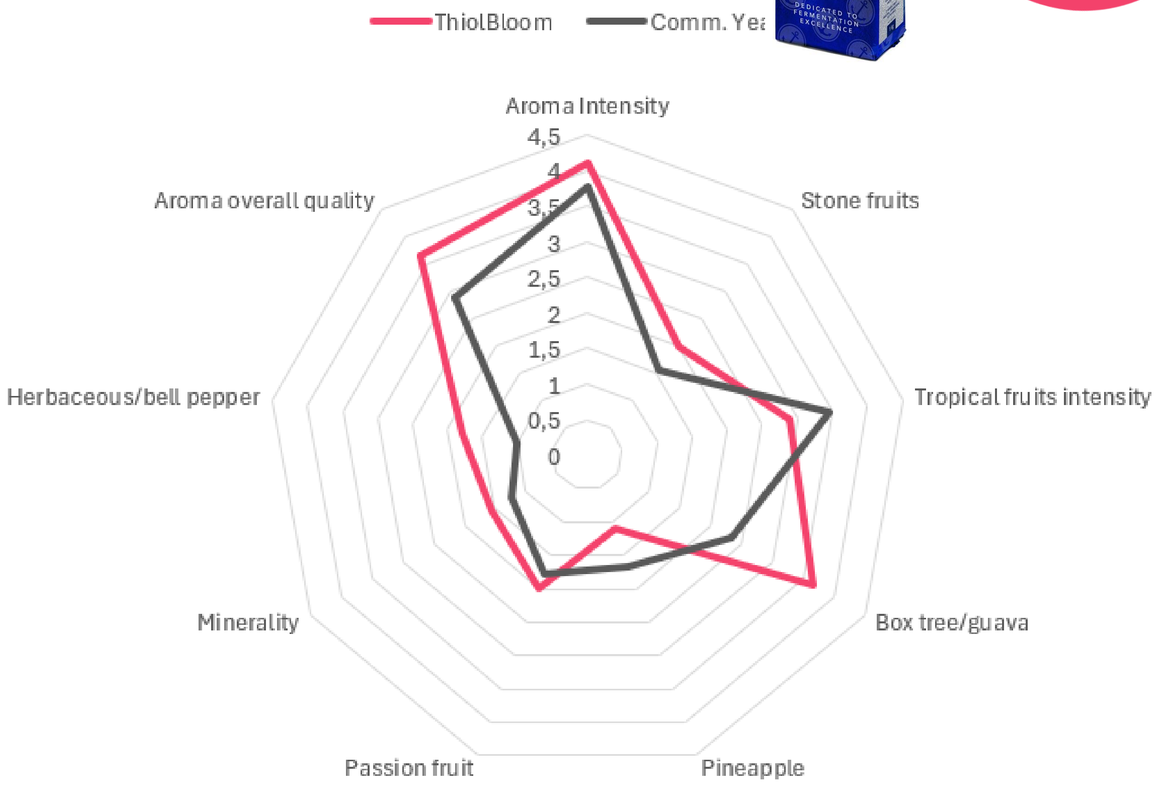
新しいLegacy ThiolBloom と他のチオール生成酵母による総チオール (ng/L) 生成の比較

チオール生成



Sauvignon blancの官能評価データ（専門パネルによる）
新Legacy ThiolBloomと他の市販チオール酵母との比較.
France (2024)

NEW



Sauvignon blancの官能評価データ（専門パネルによる）
新Legacy ThiolBloomと他の市販チオール酵母との比較.
Franschhoek, South Africa (2024)

ANCHOR チオール酵母株

INTENSITY SCALE:

ALCHEMY II | THIOLBLOOM | NT 116 | VIN 13 | VIN 7

COMPLEXITY SCALE:

THIOLBLOOM | VIN 13 | NT 116 | VIN 7 | ALCHEMY II

4MMP STYLE:

THIOLBLOOM | VIN 7 | ALCHEMY II

ツゲ,

ブラックカラント

3MH/3MHA STYLE:

NT 116 | VIN 13 | ALCHEMY II

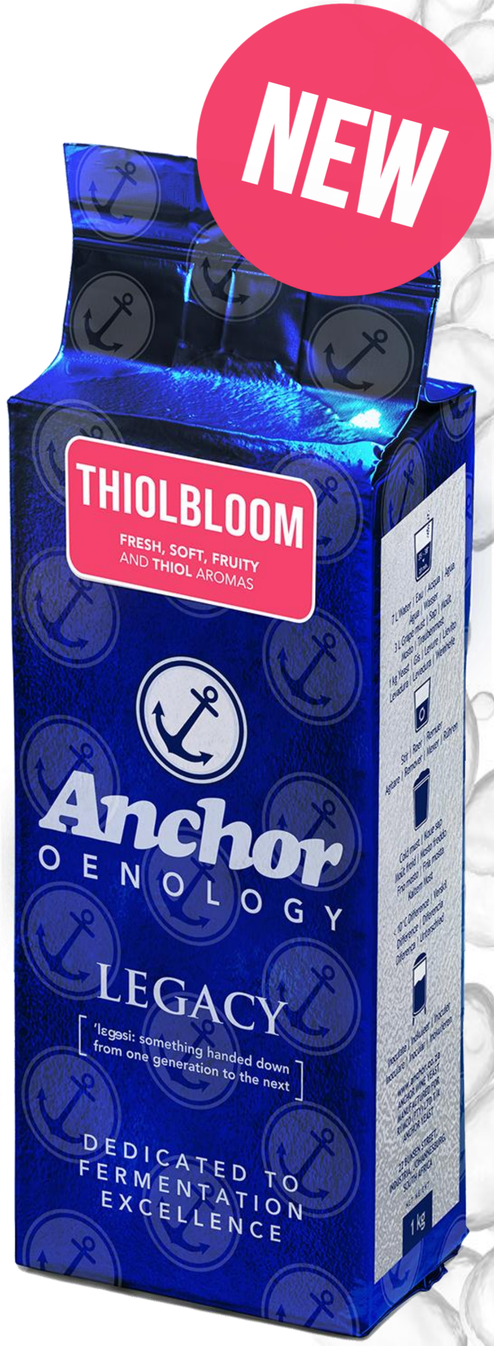
グレープフルーツ

パッションフルーツ

技術的特性

- 製品の用途:
  - フレッシュでチオール系
  - グレープフルーツ, パッションフルーツ, グズベリー, グアバとトロピカルフルーツ
  - 酸味と新鮮さが向上

- 至適温度: 15 - 28°C
- アルコール耐性: 14.5%
- 浸透圧耐性: 24°B
- 窒素要求度: 平均
- POF 特性: POF-



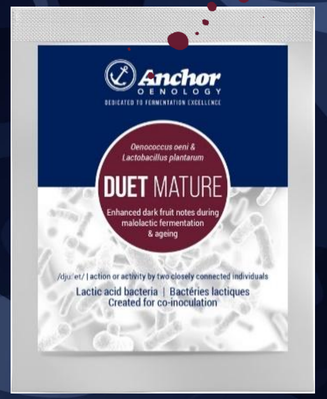
テイスティング

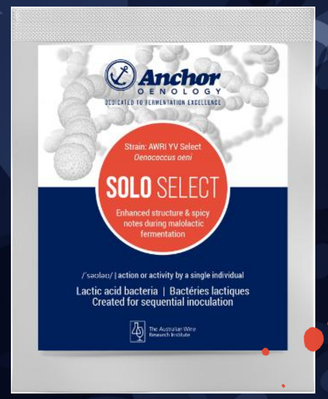
- Sauvignon Blanc (Cuatro Rayas, Spain) : Thiol Bloom, Alchemy II

- S. Blanc (IFV, France): Alchemy II, Thiol Bloom, VIN7, VIN13

BACTERIA

NEW





選考基準

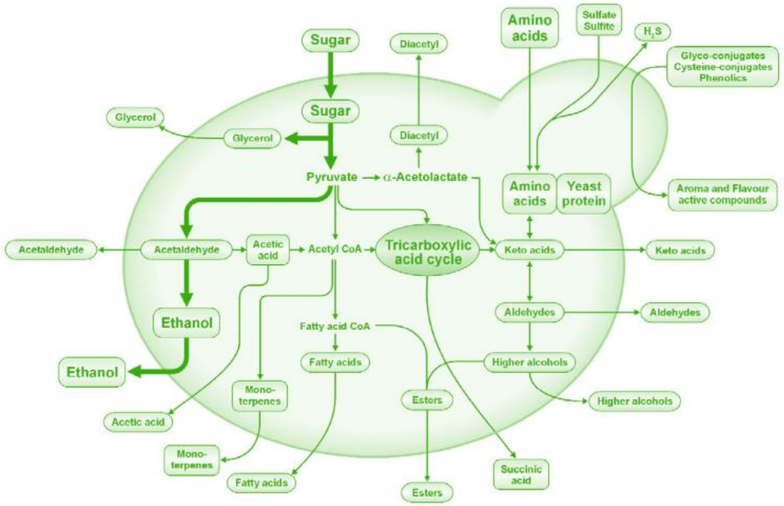
- ✓ 天然分離株
- ✓ 新しい遺伝子プロファイル
- ✓ ワインの条件に対する耐性
- ✓ ポジティブな官能貢献 – 酵素プロファイルと活性
- ✓ 生体アミンの生成なし
- ✓ シナミルエステラーゼ（揮発性フェノール生成）なし

コイノキュレーションの利点

- 酵母と同時に添加

技術的優位性	微生物の利点	官能的影響
• 総発酵時間の短縮. • 難しいワインにおけるより効果的な MLF. • 好ましい発酵温度. • MLF栄養素は不要. • SO_2 使用量の削減.	• 阻害環境が少ない (酵母からの脂肪酸とエタノール). • 微生物による腐敗のリスクの低減. • VA濃度が低い.	配糖体前駆体へのアクセス. • 総エステル含有量が高く、フルーティーな味わい. • ジアセチルとバターの様な風味が少ない. • より複雑で統合されたワイン.

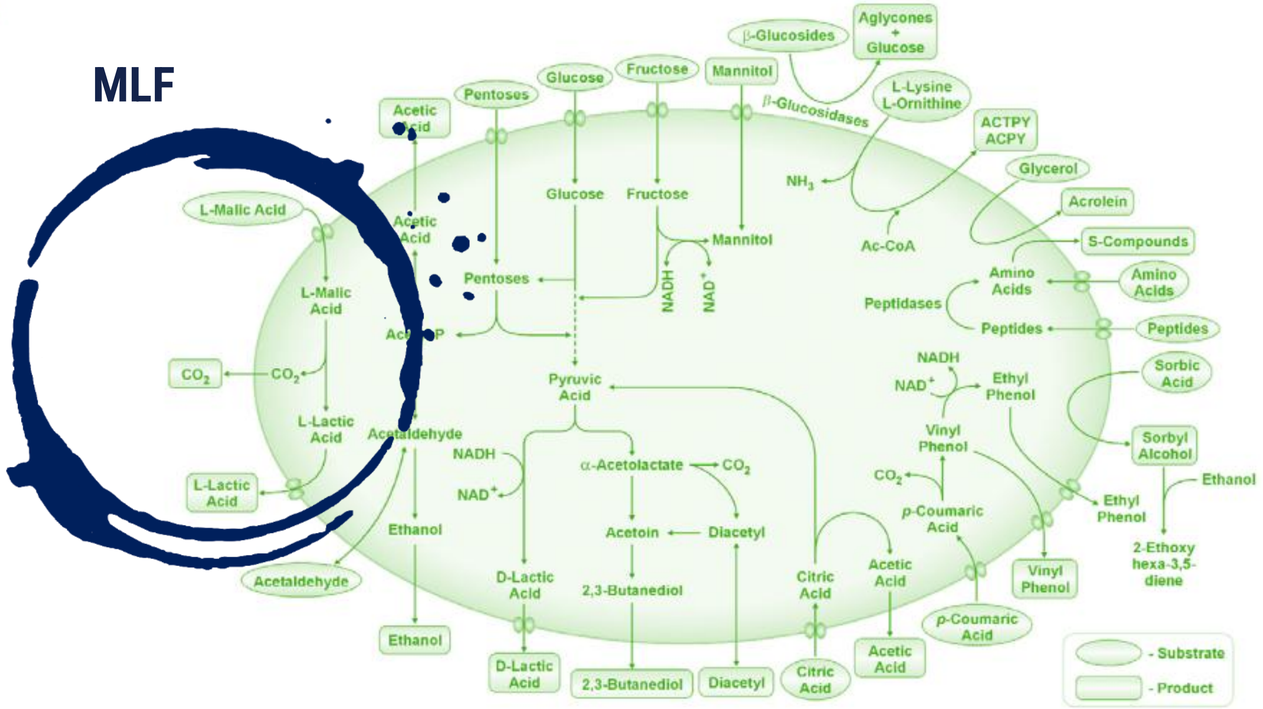
乳酸菌の官能的影響



酵母

乳酸菌

MLF



乳酸菌の官能的影響

- *L. plantarum*のより複雑な酵素プロファイルにより、より複雑な香りが生じる.

酵素		意義	
• マロラクテック酵素		リンゴ酸を乳酸に変換	
• ß-D-グルコシダーゼ		結合した前駆体を放出	
• プロリンイミノペプチダーゼ		アミノ酸前駆体を放出	
• エステラーゼ		エステルの合成又は加水分解	

SOLO AURORA

NEW

- 北イタリアで分離された***Oenococcus oeni***乳酸菌株.
- **コイノキュレーション**あるいは**連続接種**により、柔らかく、香り高く、フレッシュでフルーティーな飲みやすいワインを造ります.
- MLF中に**官能の質**を高める.

フレッシュ, フルーティーで飲みやすい

SOLO AURORA とあなたのワイン

Solo レンジ

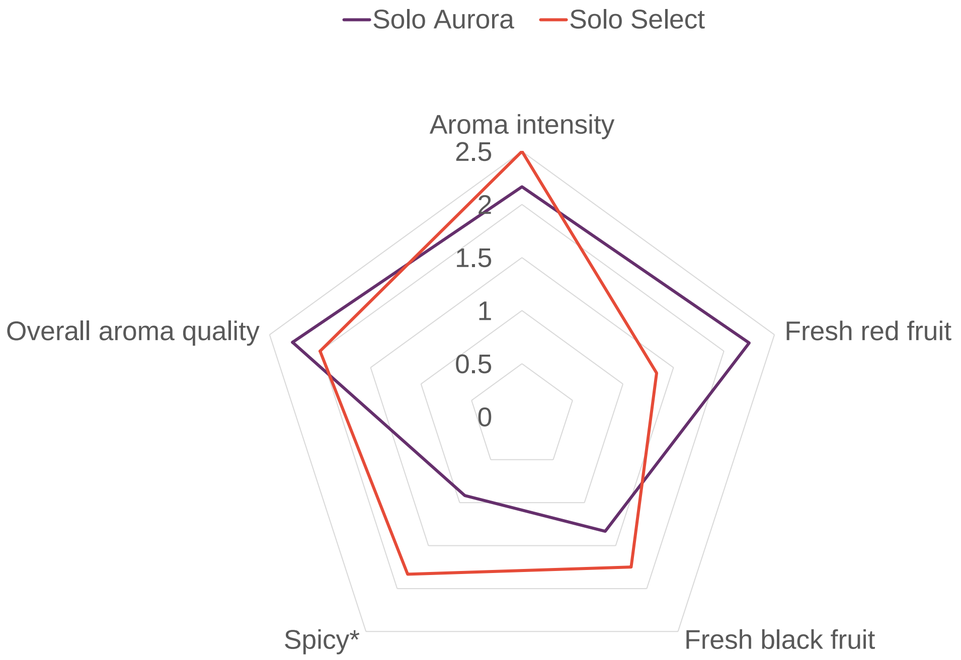
NEW

- Solo Aurora はボディ,ボリューム,フレッシュさ,酸味により新鮮で赤い果実の特性を高めます.
- Solo Select は新鮮で黒果実とスパイスの香りを高めます.
- 共に香りの強さと品質を高めたワインを造ることに成功している.

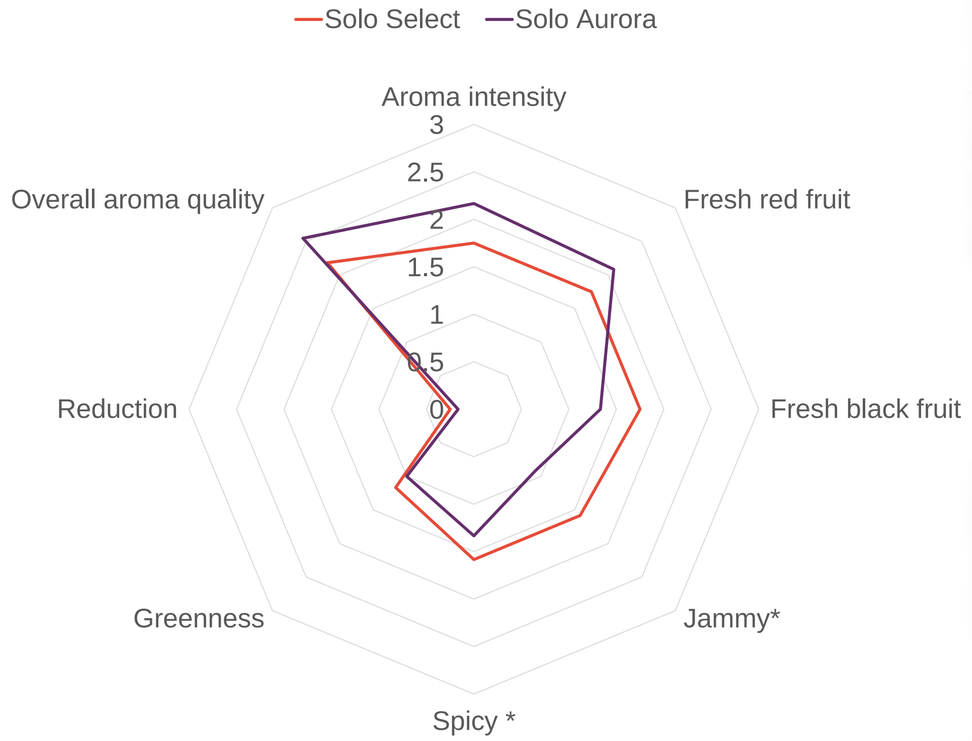
SOLO AURORAとあなたのワイン

Solo レンジ

官能結果 (アロマ). IFV, Merlot, Bordeaux (vintage 2022).



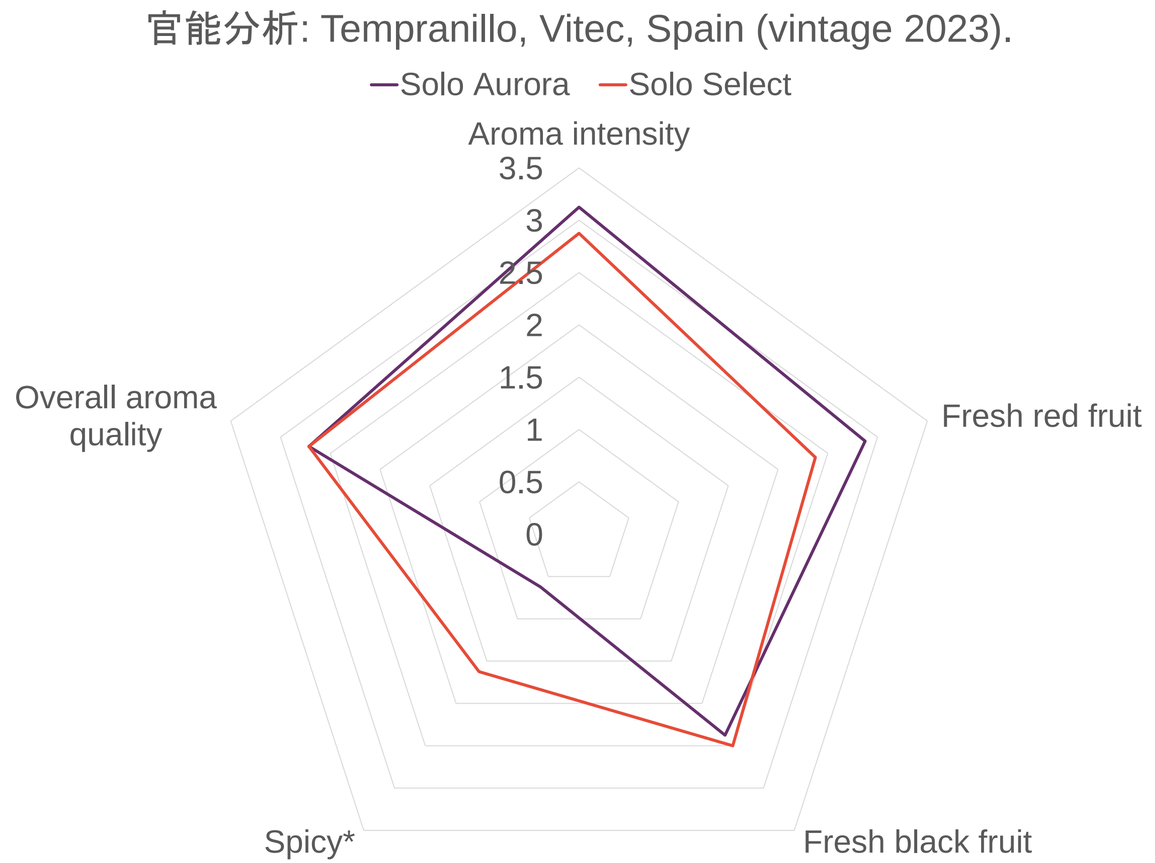
官能評価. IFV, Merlot, Bordeaux, France (vintage 2023).



NEW

SOLO AURORAとあなたのワイン

Solo レンジ

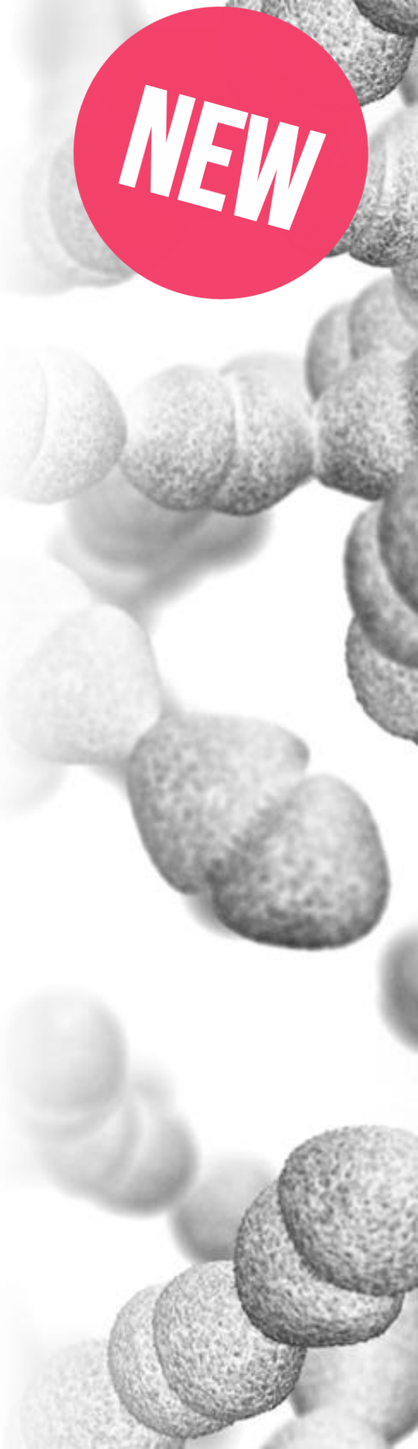


NEW

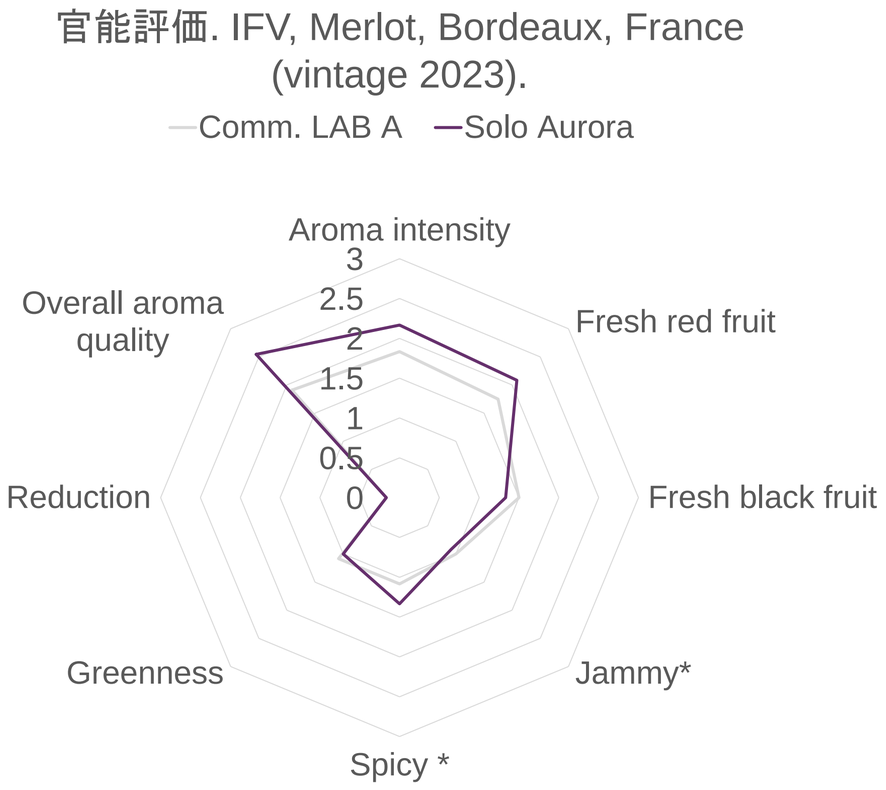
SOLO AURORA と競合品

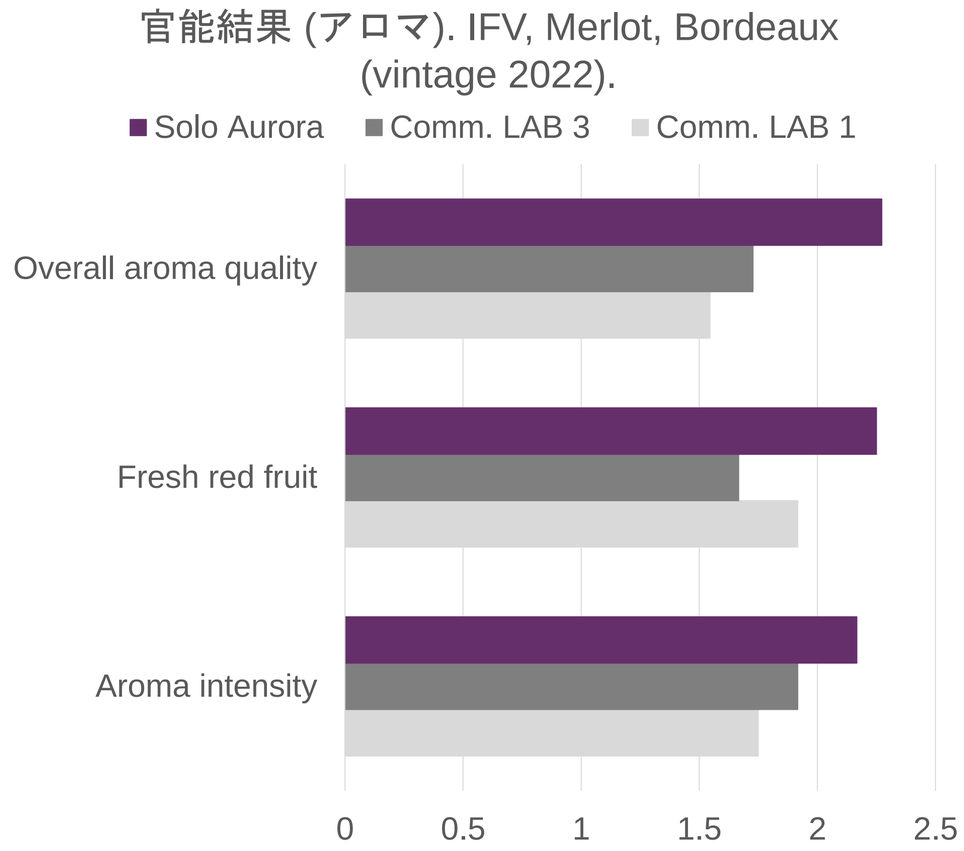
SOLO AURORA は一貫して増加:

- 新鮮な果物, 主に赤い果物.
- 全体的な香りの強さ.
- 全体的なアロマの質.
- スパイスと黒果実の香り.



SOLO AURORAと競合品





| SOLO AURORA

NEW

- 白及び赤ワイン.
- 良好な移植性と効率的な発酵速度.
- アロマの質を高める.
- フルーツアロマと口あたりが強化される.
- 渋みと還元感が軽減される.
- アロマの質を強さが増大.

- 揮発性酸の生成が少ない.
- ジアセチルの生成量が少ない.
- 生体アミンの生成がない.
- 共接種、連続接種共に使える.

技術情報

SOLO AURORA

菌株: *Oenococcus oeni*

**マロラクテック発酵中に白ワイン
と赤ワインのフルーティーでフ
レッシュな香りが強化されます.**

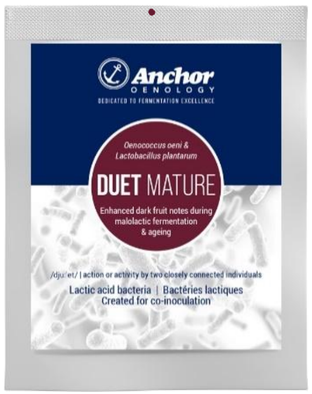
用途

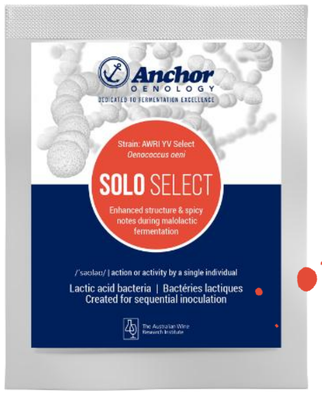
白、赤ワイン

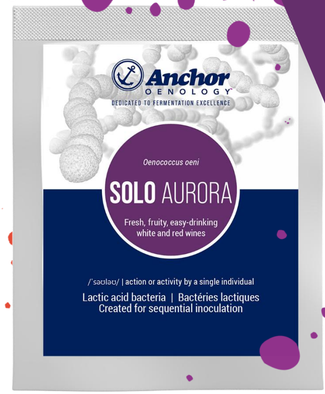
技術的パラメーター

pH: ≥ 3.2
潜在的アルコール耐性: 15%
至適温度: 18 - 28 °C
**接種時総 SO2: 40 ppm; 生体アミン生成なし; VA
生産は殆どまたは全くない
シナミルエステラーゼ活性マイナス：腐敗性フェ
ノール化合物の形成を防ぐ**

ANCHOR 乳酸菌レンジ





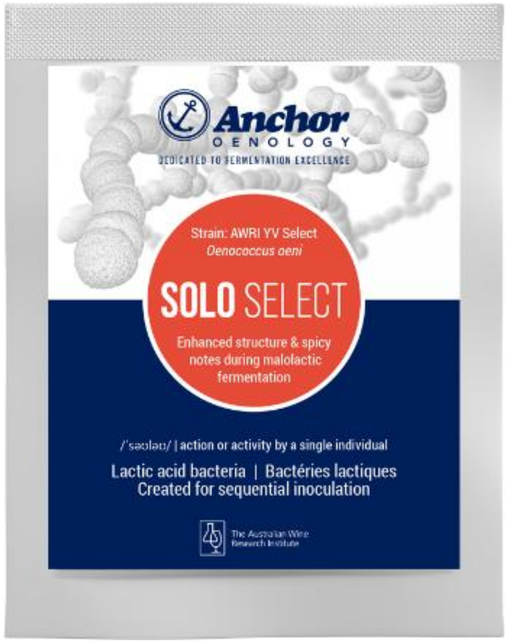


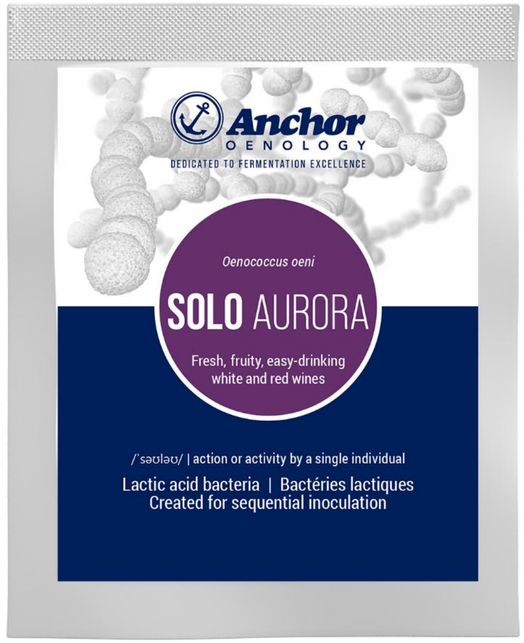
NEW

Anchor
OENOLOGY
DEDICATED TO FERMENTATION EXCELLENCE

テイスティング

- Merlot (Vitec, Spain) : LAB 1, SOLO SELECT, SOLO AURORA





RAPIDASE

HIGH SPEED ENZYMES SINCE 1922

新 RAPIDASE® 酵素 2025

OENOBRANDS®
ADVANCED WINEMAKING SOLUTIONS

dsm-firmenich

1　新 Rapidase® Fresh Berry 2025

Rapidase® Fresh Berry

フレッシュで現代赤ワインのアロマの強さと品質を高める酵素

1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

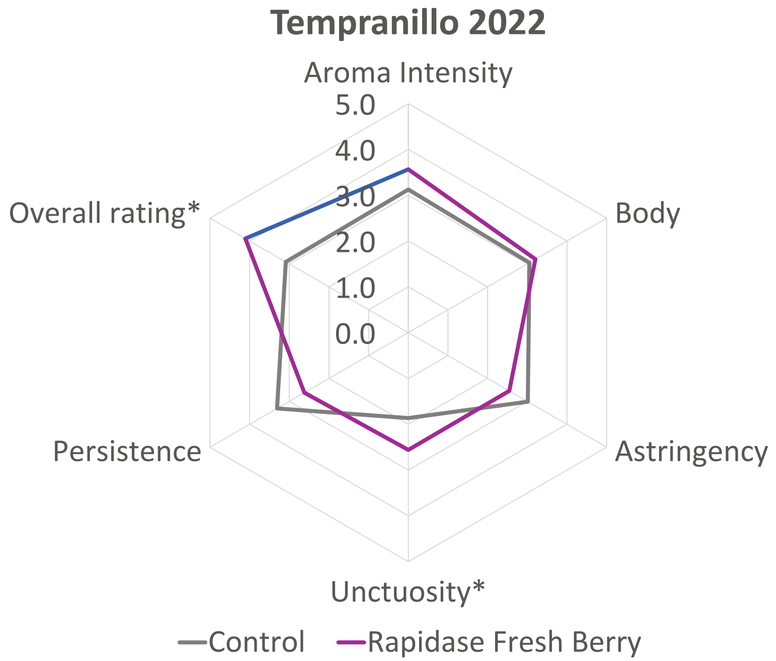
コメント

- 伝統的な赤ワインのプロファイルが消費者の期待に応えられていない為、世界的に赤ワインの消費量は減少傾向であり、その傾向は更に深刻化しています。ワインは食中酒以外でも益々消費されており、ワインの酒類に関わらず、**フレッシュでフルーティーな風味への需要**が高まっていることが伺えます。

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

成功の歴史

- 2022年、 **VITEC (Spain)**との提携を開始しました。 **Tempranillo 種のブドウ**に酵素を **2 mL/hL 添加しました。**
- 完成したワインの官能評価では、 Rapidase Fresh Berry がアロマの強さと総合評価において最も優れており、酵素なしの対象品よりも好まれました。



Sensory contribution of Rapidase Fresh Berry in Tempranillo at 2 mL/hL. VITEC (Spain) 2022

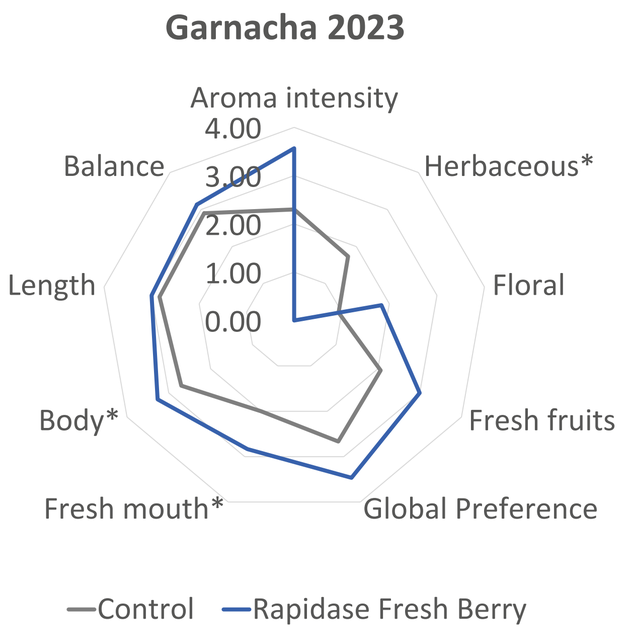
Statistical analysis: *significant (p < 0.05), **very significant (p < 0.01), **highly significant (p < 0.001)

1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

成功の歴史

- 2023年には**Excell Ibérica (Spain)** と提携し、リオハ産の **Garnacha 種ブドウを使用しました。**
- 官能試験の結果、対象群はハーブの香りが高いですが、Rapidase Fresh Berry使用の物はハーブの香りが少なく、赤と黒ブドウの品質の良いフルーツ香が確認されました。



Sensory contribution of Rapidase Fresh Berry in Garnacha at 2 mL/hL. EXCELL LAB (Spain) 2023

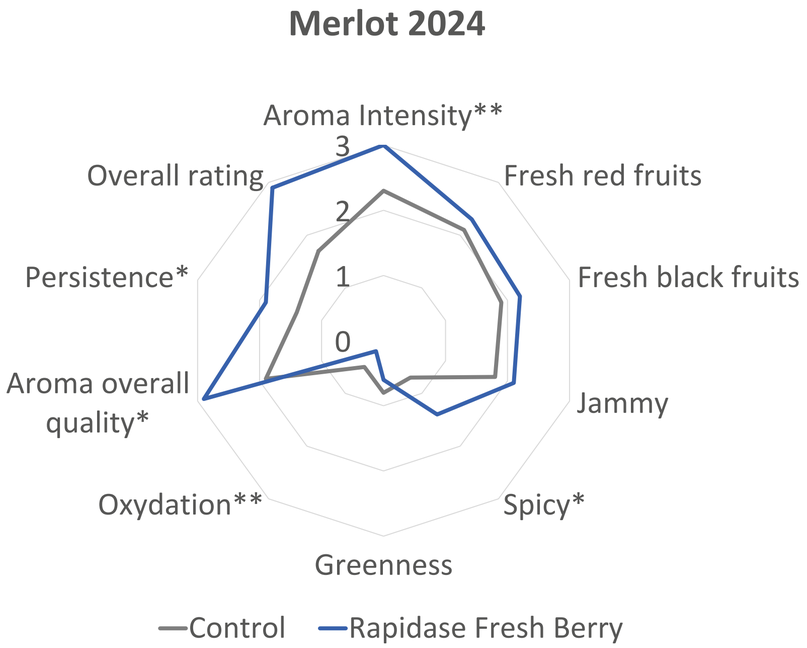
Statistical analysis: *significant (p < 0.05), **very significant (p < 0.01), **highly significant (p < 0.001)

1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

成功の歴史

- **I2024年 Bragato Research Institute (New Zealand) でMerlotの試験が行われました**
- 官能評価の結果、**Rapidase Fresh Berry** は対象と比べより濃厚で上質なアロマを生み出すことが再び確認されました。



Sensory contribution of Rapidase Fresh Berry in Merlot at 2 mL/hL. BRI (New Zealand) 2024

*Statistical analysis: *significant (p < 0.05), **very significant (p < 0.01), **highly significant (p < 0.001)*

1. New Rapidase Enzyme 2025

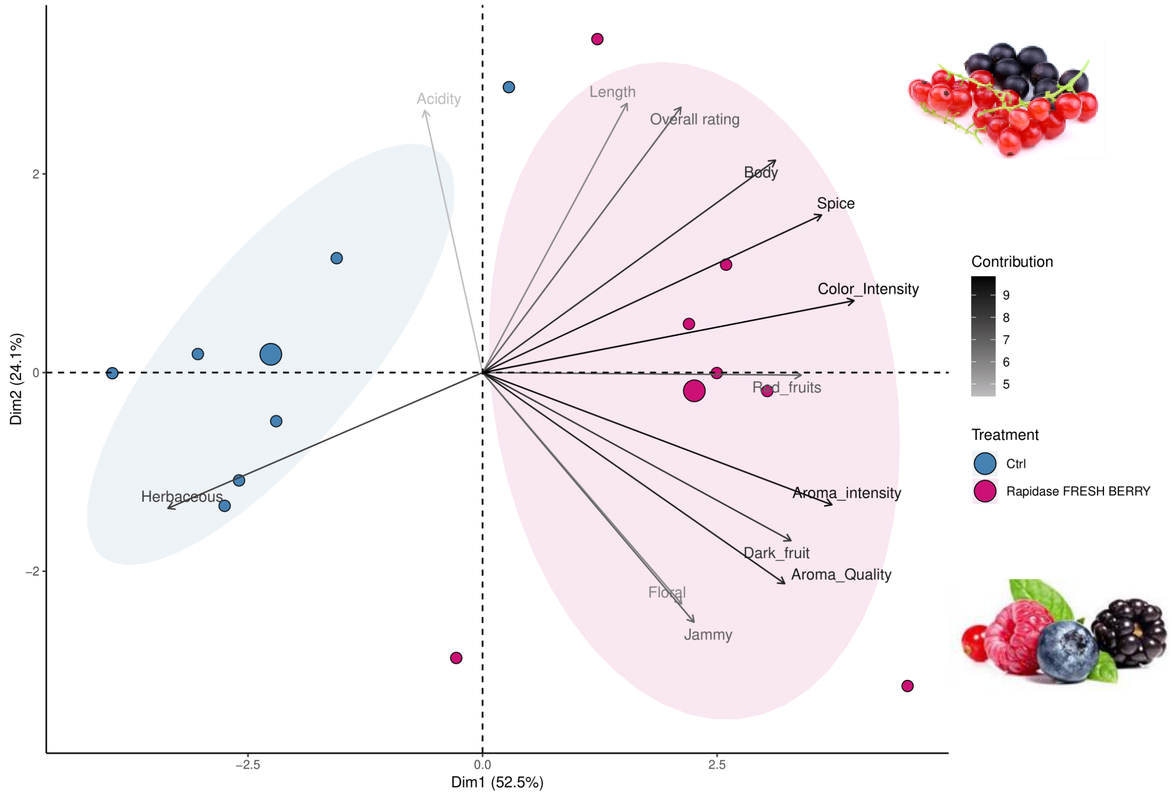
Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

成功の歴史

- **PCA (主成分分析)**

Rapidase Fresh Berry は、赤果実と黒果実のアロマ、アロマの強さと質、口当たり、色の濃さといったワインの主要な特性を向上させます。

これらの知見は、ワインメーカーにとって、**フレッシュで現代的な赤ワイン**のアロマ表現と品質を向上させる強力なバイオテクノロジーとなります。



北半球と南半球における様々なワイン試験(2022-2024) の官能評価結果のPCA (主成分分析)

1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

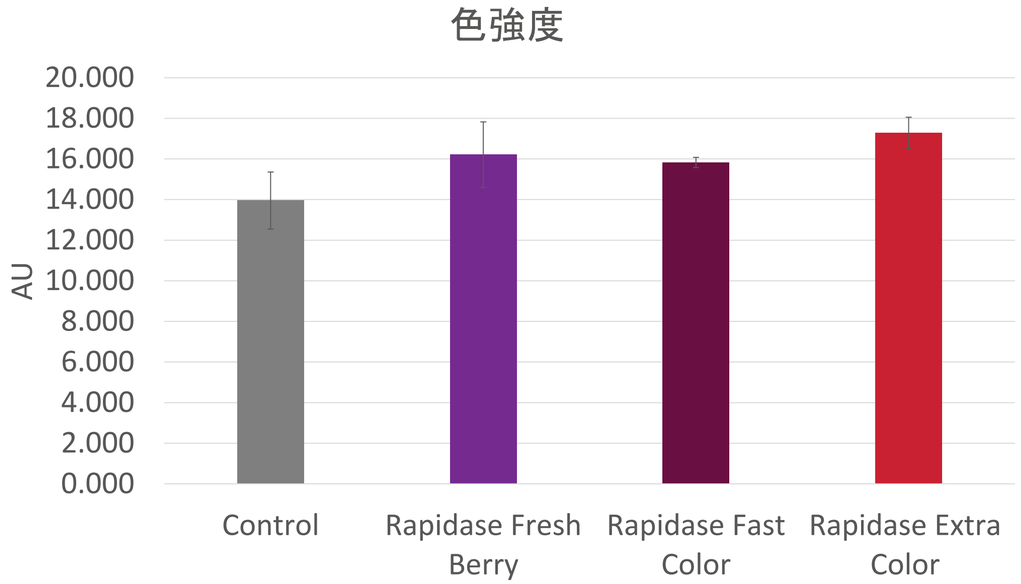
持ち帰って頂きたいメッセージ

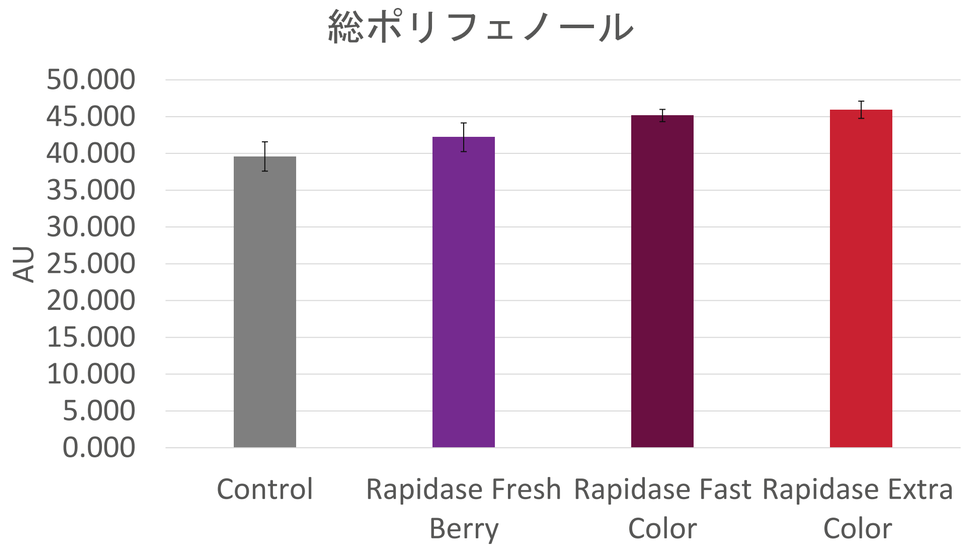
1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

マセレーションパラメーターについて

- **赤ワインのAF/M中に酵素を使用する場合のマセレーションパラメーターは、常に酵素を使用しないコントロールを改善しますが、大きな違いは得られませんでした。**





Merlot に対するRapidase酵素を2 g 又はmL/hLのマセレーションパラメーター.
BRI (New Zealand) 2024

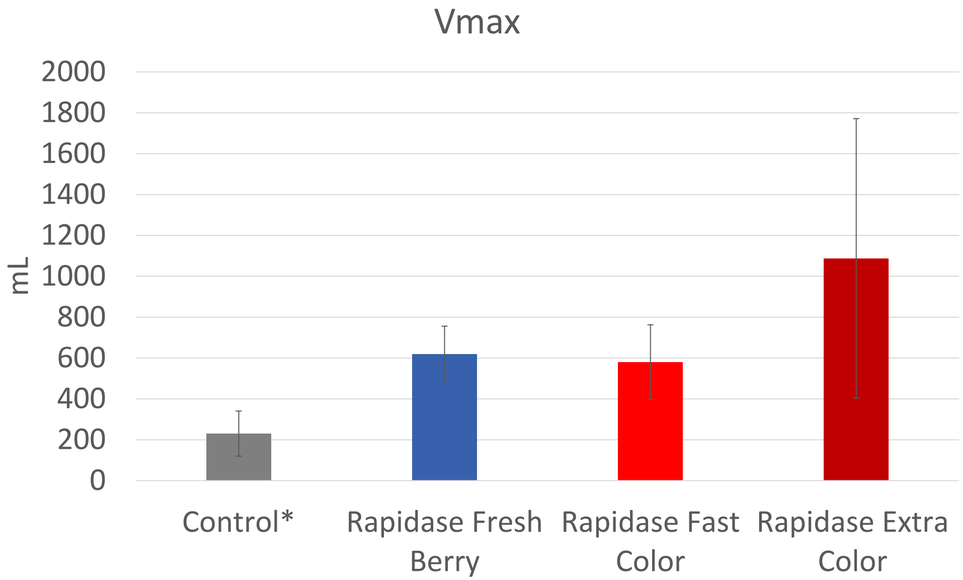
1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

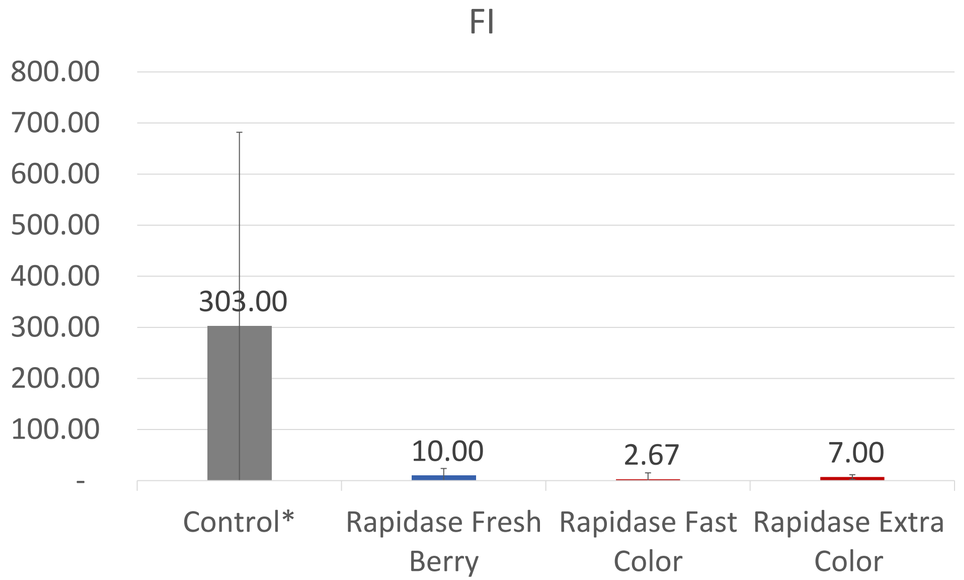
RAPIDASE 赤用マセレーション酵素を使用した時のろ過性と瓶詰め前作業に関して

- **2024年 Bragato Research Institute (New Zealand),**
- MLF後のろ過性パラメーター.

Control* そのままではろ過出来なかったので作業を実施する前に遠心分離と1.6 フィルター通過させました



0.65 µm のメンブランフィルターを用い、1 barの圧力下でワインをろ過する
V1 = 2分間でろ過されたワインの量
V2 = 5 分でろ過されたワインの量
Vmax. = 3/[(5/V2) – (2/V1)]

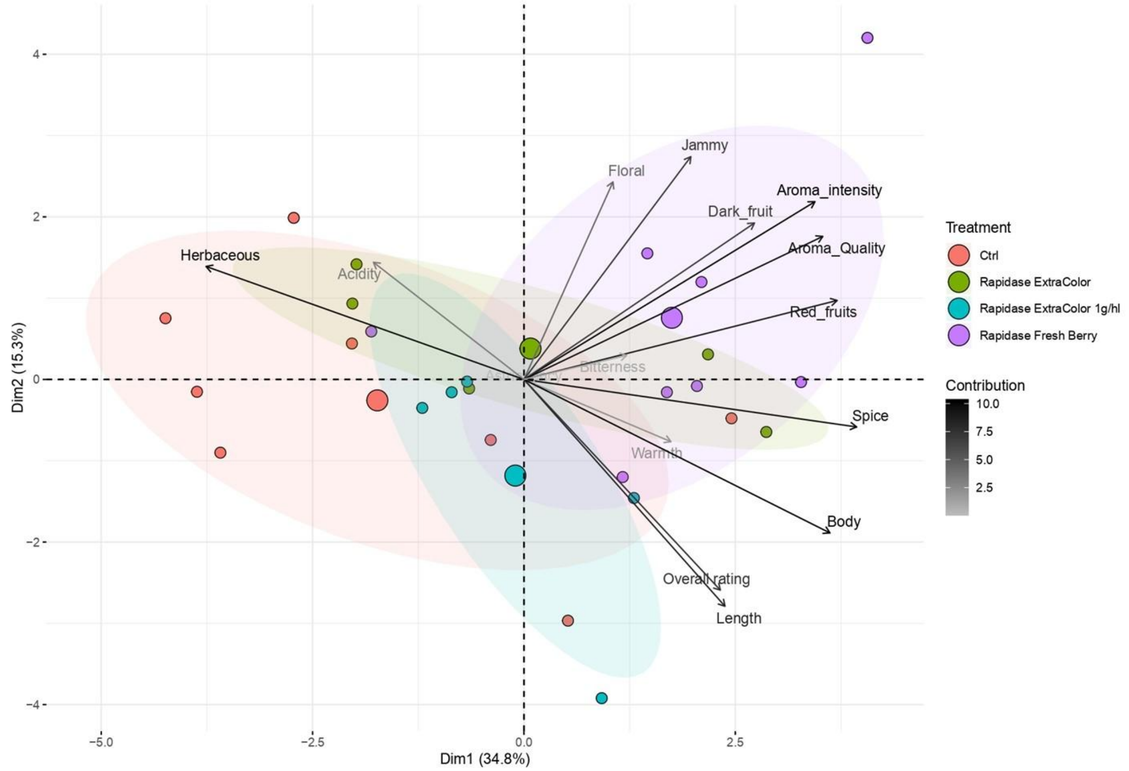


ローレンティ法
0.65 µm のメンブランフィルターを用いて、2 bar の圧力下でろ過する.
FI= 300 mLをろ過するのにかかる時間（秒）) – 2(150 mLをろ過するにかかった時間（秒）)*
FI < 20の場合、ワインはろ過に適している

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

RAPIDASE マセレーション酵素の適切な使用について

- 適切な量 (2 g または mL/hL) のマセレーション酵素を使用することで、酵素を使わない時の青臭く、草木の香りと酸味が強いワインから、より濃厚で、アロマが高く、世界で好まれるワインへと変化させることが出来ます。



北半球と南半球における様々なワイン試験(2022-2024) の官能評価結果のPCA (主成分分析)

1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

Rapidase® Fresh Berry® は現在の赤ワインのアロマの強さと品質を高めるための幅広い活性スペクトルを備えた液体酵素製剤です。

赤ブドウ		
T^a	添加量	コメント
8-12 °C (発酵前の低温浸漬前に添加する場合)	3 mL/hL	品質の高い赤ブドウには、ラックアンドリターン（デレステージ）などの過度なマセレーション技術や26℃を超える温度を避けて、ラピダーゼフレッシュベリーを使用してください。
20-25 °C (伝統的なマセレーション/発酵の前に添加する場合)	2 mL/hL	

1. New Rapidase Enzyme 2025

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

Rapidase® Fresh Berry®は現在の赤ワインのアロマの強さと品質を高めるための幅広い活性スペクトルを備えた液体酵素製剤です

- **用途:** フレッシュな現代の赤ワインの香りの強さと品質を高める
- **効果:** 赤ブドウの皮と果肉の細胞壁の選択的分解

- **起源:** *Aspergillus niger*

- **有機:** NOP

- **nFCE:**シンナミルエステラーゼの自然現象、無視できるレベルのシンナミルエステラーゼ

- **用量:** 1 kg

New Rapidase Oenobook 15

Rapidase レンジ

ENZYMES

RAPIDASE
FAST AND EFFICIENT ENZYMES

RAPIDASE®	APPLICATION	EFFECT	DOSAGE	L / G	PACKAGING
PROTEOSTAB	To achieve protein stability in wine	Degradation of heat unstable proteins in wine	5 mL/hL		1 Kg
EXPRESSION AROMA	Aroma precursor extraction in white and rosé macerations	Skin and pulp cell wall degradation	2-3 g /100 Kg		100 g 1 Kg
EXTRA PRESS	Fast, efficient pressing of grapes	Grape skin and pectin degradation	1,5-2,5 mL /100 Kg		5 Kg 20 Kg
CLEAR	Fast, efficient grape must clarification	Pectin main and side chains degradation	1-2,5 g/hL		100 g - 1 Kg
			1-2,5 mL/hL		1 Kg - 20 Kg
CLEAR EXTREME	Complete clarification in difficult conditions	Pectin main and side chains degradation down to 6 °C	1-3 g/hL		100 g
			1-3 mL/hL		1 Kg - 5 Kg
FLOTATION	Fast, efficient grape must flotation	Advanced pectin main chain degradation	1-2 mL/hL		5 Kg 20 Kg
THERMOFLASH	Fast, efficient clarification of thermo treated grape must	Advanced grape polysaccharides degradation up to 70 °C	1-3 mL /100 Kg		20 Kg
FAST COLOR	Fast colour and polyphenol extraction in short maceration processes	Fast red grapes skin cell wall degradation	1-3 mL /100 Kg		5 Kg
NEW 2025 FRESH BERRY	Enhanced aroma intensity and quality in fresh modern red wines	Selective red grapes skin and pulp cell wall degradation	2-3 mL/hL		1 Kg
EXTRA FRUIT	Aroma precursor extraction in red grapes macerations	Red grapes skin and pulp cell wall degradation	2-3 g /100 Kg		100 g 1 Kg
EXTRA COLOR	Enhanced colour and polyphenol extraction in red wines	Advanced red grapes skin cell wall degradation	2-3 g /100 Kg		100 g 1 Kg
2024 VINOFAST	To optimize pre-bottling operations	Advanced grape polysaccharides degradation in wine	2-5 mL/hL		1 Kg
2024 GLUCANFREE	For must and wines affected by *Botrytis cinerea*	*Botrytis* β-glucans degradation in must and wine	2-4 mL/hL		1 Kg
2024 BATONNAGE	Release of molecules contributing to mouthfeel and aroma	Yeast cell wall degradation	2-2,5 g/hL		100 g
			2-2,5 mL/hL		1 Kg
REVELATION AROMA	Fast, complete varietal aroma revelation *Smoke taint release before removal	Hydrolysis of glycosylated compounds	1-3 g/hL *5-10 g/hL		100 g

Quality for Life™ **Peace of mind comes with dsm-firmenich enzymes**
More information at **www.qualityforlife.com**

To offer the best efficiency in application, each **Rapidase®** formulation is developed and **tested** with the world's most renowned wine research institutes and **validated** in wineries at production scale. Our technical and sales staff are available to provide you with test results, as well as assist you in evaluating the product's premium performance under your specific conditions.

TESTED AND VALIDATED BY OENOBRANDS

RAPIDASE®	Pectinases active on pectin main chains: PE: Pectin methylesterase PG: Pectin galacturonase	Pectinases active on pectin main chains: PL: Pectin lyase	Pectinases active on pectin side chains: Rhamnogalacturonase	Pectinases active on pectin side chains: Arabinase	Cellulases and hemicellulases	β - D glucanase	Glycosidases (β - D glucosidase, α - L arabinofuranosidase, α - L rhamnosidase, β - D apiosidase)	Protease (Aspergillopepsin I)
PROTEOSTAB								●
EXPRESSION AROMA	●			●	●			
EXTRA PRESS	●			●	●			
CLEAR	●			●				
CLEAR EXTREME	●			●				
FLOTATION	●	●						
THERMOFLASH	●		●	●	●			
FAST COLOR	●		●	●	●			
NEW 2025 FRESH BERRY	●		●	●	●			
EXTRA FRUIT	●		●	●	●			
EXTRA COLOR	●		●	●	●			
2024 VINOFAST	●		●	●	●	●		
2024 GLUCANFREE						●		
2024 BATONNAGE						●		
REVELATION AROMA							●	

New Rapidase Oenobook 15

Rapidase Fresh Berry: フレッシュでモダンな赤ワインを造る酵素

ENZYMES

RAPIDASE HIGH SPEED ENZYMES SINCE 1922 FRESH BERRY NEW

THE MUST-HAVE ENZYME FOR FRESH & BALANCED RED WINES

Rapidase® Fresh Berry® is a liquid enzyme formulation with a broad spectrum of activities to increase the aroma intensity and quality of modern red wines.

THE CONTEXT

Red wine quality is generally attributed to phenolic contents, which affect colour intensity, stability, and structure depending on the family **(Oenobook 10 and 11)**. For decades, winemakers have focused on red wine maceration parameters like TPI, CI, total anthocyanins, total tannins, and polymerisation indexes.

Due to traditional red wine profiles not meeting consumer expectations, global red wine consumption is declining and becoming more severe. Wine is increasingly consumed outside meals, indicating a demand for fresh, fruity flavours regardless of colour.

Grape cultivars and winemaking processes also matter, and enzymes during maceration have transformed traditional methods, allowing winemakers to achieve desired sensory characteristics more efficiently and precisely, influencing consumer preference and marketability.

Two years ago, we began researching new enzyme preparations for red maceration to diversify our portfolio and offer winemakers a new red wine solution tailored to this new market expectation.

A HISTORY OF SUCCESSFUL TRIALS

VITEC In 2022, we started working with VITEC (Spain) to determine the sensory impact of **Rapidase Fresh Berry**. The enzyme was added to Tempranillo grapes at 2 mL/hL before a cold soak step (6 hours at 10 °C) and then fermented with **Fermivin® P21** at 22 °C. Sensory results on final wines by the VITEC panel showed Rapidase Fresh Berry as the best in terms of aroma intensity and overall rating **(Figure 1)** and was preferred than the control without enzyme.

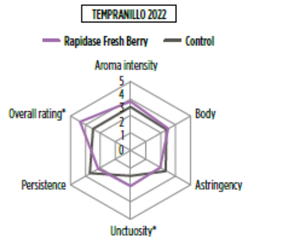


Figure 1. Sensory contribution of Rapidase Fresh Berry in Tempranillo at 2 mL/hL. VITEC (Spain) 2022.

excel IBÉRICA After those first promising results, in 2023, we collaborated with Excell Ibérica (Spain) to further follow the effect of **Rapidase Fresh Berry** in Garnacha grapes from Rioja Alta, without the cold maceration and still fermenting at 22 °C. A month after the end of malolactic fermentation, the sensory test confirmed that **Rapidase Fresh Berry** has stronger and better-quality fruity aromas (red and black) than the control, which is clearly more in the herbaceous spectrum range.

BRAGATO RESEARCH INSTITUTE In 2024 at the Bragato Research Institute (New Zealand), trials were conducted on Merlot. Each treatment was punched down once per day during a period of three days cold soak at 7 °C and fermented at 25 °C with **Fermivin PDM**. Sensory analysis confirmed again that **Rapidase Fresh Berry** produces more intense and qualitative aromas compared to control **(Figure 2)**. The same trend was observed on Tempranillo grapes from Excell Ibérica trials repeated also in 2024.

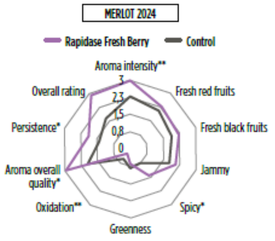


Figure 2. Sensory contribution of Rapidase Fresh Berry in Merlot at 2 mL/hL. BRI (New Zealand) 2024.

HIGH SPEED / SIMPLE AND FOCUSED
TESTED AND VALIDATED / TRUSTED

To better evaluate the impact of Rapidase Fresh Berry, we conducted an integrative analysis using data from trials by VITEC, Excell Ibérica, and BRI since 2022 across both hemispheres. Garnacha, Tempranillo, and Merlot wines were tested under controlled conditions, ensuring robust and reproducible results.

All sensory data were standardised to account for regional, vintage, and varietal differences. **Figure 3** presents a Principal Component Analysis (PCA), highlighting key sensory patterns and demonstrating how **Rapidase Fresh Berry** enhances wine characteristics.

This PCA **(Figure 3)** confirms the consistent impact of enzymes in red winemaking, demonstrating their essential role in enhancing positive aromatics. It also highlights the reliable effect of **Rapidase Fresh Berry** on key wine attributes—red and dark fruit aromas, intensity and quality of aroma, mouthfeel, and colour intensity—regardless of vintage or region. These insights provide winemakers with a powerful biotechnological tool to enhance the aromatic expression and quality of fresh, modern red wines.

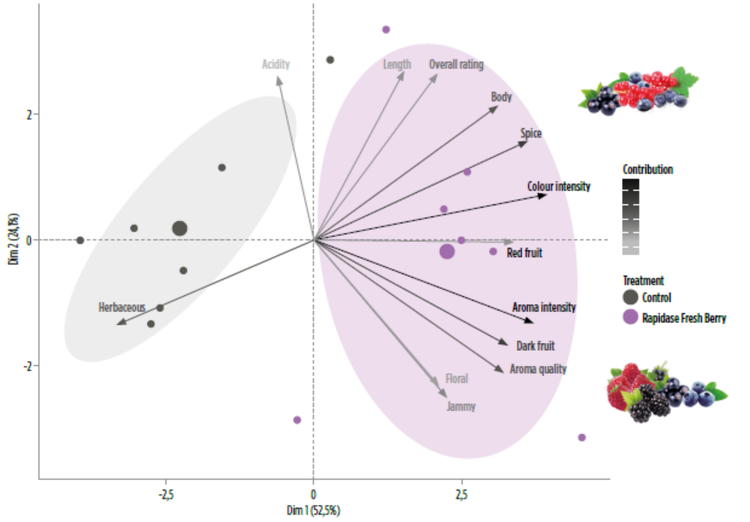


Figure 3. PCA (Principal Component Analysis) of sensory results across different wine trials in the northern and the southern hemispheres, highlighting the aroma differences between wines with and without Rapidase Fresh Berry (2 mL/hL).

CONCLUSION

Wines made without enzymes consistently show more astringency, herbaceous notes, oxidation, acidity and sour. In contrast, Rapidase Fresh Berry enhances the aromatic intensity and quality of fresh, modern red wines. Depending on the grape variety and maceration technique, it brings out red and black berry aromas, floral and spicy notes, while ensuring a well-balanced wine with better body and preserved colour richness.

New Rapidase Oenobook 15

Rapidase VinoFast: 瓶詰め前の作業を最適化する

ENZYMES

RAPIDASE HIGH SPEED ENZYMES SINCE 1922 VINOFAST

A REVOLUTIONARY ENZYME FOR FINING REDUCTION AND IMPROVED PRE-BOTTLING

Rapidase® Batonnage is a liquid enzyme preparation with a broad spectrum of pectolytic activities such as polygalacturonases and α-N-arabinofuranosidases. Together with cellulases and β-D-glucanases, these enzymes act on polysaccharides that negatively impact wine clarification and filtration and affect the wine quality.

ONE MORE STEP INTO NEW "WINEMAKING ERA"

Modern winemaking demands quality preservation while optimising pre-bottling for efficiency.

After fermentation, structured and complex wines are aged in-cellar while young wines undergo rapid clarification, filtration, and bottling. In both cases, a broad family of so-called "polysaccharides" and various colloidal molecules can complicate operations, increasing time, labour, and costs.

Oenobrands' know-how and expertise have been key in developing the **Rapidase VinoFast** formulation, an enzyme designed to target the main macromolecules affecting wine pre-bottling operations.

Rapidase Vinofast is also playing a key role in the strategy of using more biotech products instead of additives and chemicals, from grape to bottle. It aligns with products like **Rapidase Proteostab**, the enzyme for the protein stabilisation, and **Rapidase Batonnage Liquid**, a highly concentrated pure glucanase that extracts polysaccharides from wine lees to improve wine mouthfeel and aroma.

RAPIDASE VINOFAST TO REDUCE THE USE OF FINING AGENTS

The winemaking approach of using fewer additives and minimising their impact on the wine is becoming increasingly popular. The effect of fining agents on wine quality is well known, which is why many producers are shifting towards an "additive approach" rather than removing components from their wines. However, this is not always feasible across all wine categories due to factors such as price positioning, additive costs, winemaking strategies, and, in some cases, technical constraints related to wine composition.

Rapidase Vinofast, a revolutionary enzyme developed by Oenobrands, has been designed to reduce or eliminate the use of fining agents in order to make the best wine possible, minimising external intervention with additives or chemicals. The effect of **Rapidase Vinofast** is immediately shown **(Figures 1 and 2)** as it reduces the wine turbidity and improves the wine filterability without any clarification steps, leading to more sustainable and better wines in terms of mouthfeel and aromas.

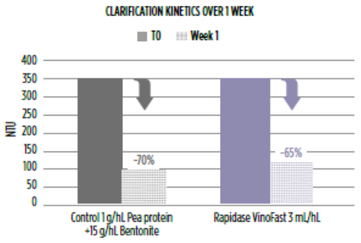


Figure 1. Clarification performance with 3 mL/hL of Rapidase VinoFast (without fining agents) versus control (with fining agents). Contact time: 1 week at 15 °C. Excel Ibérica (Spain), 2024.

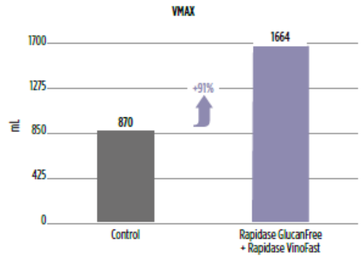


Figure 2. Vmax for red grapes with 30% *Botrytis cinerea*. Rapidase GlucanFree during AF at 3 mL/hL + Rapidase VinoFast after MLF for 1 week at 3 mL/hL. VITEC (Spain), 2025.

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TESTED AND VALIDATED / TRUSTED

RAPIDASE VINOFAST OPTIMISES FILTRATION STEPS AND CELLAR OPERATIONS

Speeding up the filtration step and decreasing filter clogging, **Rapidase VinoFast** also reduces the eco- or carbon footprint of the winemaking process thanks to water and energy savings.

Several winemakers have reported that using **Rapidase VinoFast** improved filtration and increased flow rates. As a result, they required fewer filter cleaning detergents, significantly reducing filtration costs.

Figure 3 shows that adding **Rapidase VinoFast** during alcoholic fermentation can enhance filtration flow rate of the future wine.

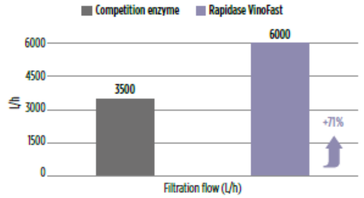

Figure 3. Filtration flow in a challenging thermoflashed red hybrid wine from the 2023 harvest with 2.2 mL/hL of Rapidase VinoFast. Added during AF, followed by a 2-month contact time (Canada, 2023).

HOW TO USE RAPIDASE VINOFAST?

- Preventive action: Addition of **Rapidase Vinofast** during alcoholic fermentation
- Curative action: at the rack-off alcoholic fermentation, before clarification or before any kind of filtration (earth, pad, lenticular, cross-flow, membrane). End-user recommendations are displayed in **Table 1**.

Rapidase pectin and **glucan test protocols** are available upon request.

NO GLUCANS IN WINE			
T°	DOSE	MINIMUM CONTACT TIME	
When > 15 °C	2-3 mL/hL	1 week	
Between 10 and 15 °C	3-5 mL/hL	2 weeks	
PRESENCE OF GLUCANS			
GLUCANS CONCENTRATION	TEMPERATURE	DOSE	MINIMUM CONTACT TIME
5-15 mg/L (< 30 % Botrytized grapes)	Above 15 °C	3-5 mL/hL	2-3 weeks
>15 mg/L (> 30 % Botrytized grapes)	Above 15 °C	3-5 mL/hL In combination with 2 mL/hL **Rapidase GlucanFree**	2-3 weeks

Table 1. Rapidase VinoFast instructions for use and dosage.

Rapidase Batonnage Liquid

ENZYMES

RAPIDASE
HIGH SPEED ENZYMES SINCE 1922
BATONNAGE

LEES OPTIMISATION FOR AROMA & MOUTHFEEL

Rapidase® Batonnage is a liquid β-glucanase formulation that promotes the release of mannoproteins and other beneficial compounds contained in dead yeast cells. This maximises the inner potential of natural wine lees. Its use allows obtaining wines with an increased mouthfeel, a better balance and an enhanced aroma profile. This process shortens the traditional « sur lies » ageing period from months to weeks, minimising the risks of oxidation and microbial contamination.

MANNOPROTEINS RELEASE

The efficiency of this process can be monitored through amino acid or polysaccharide analysis. Thanks to those tools, we observed that with **Rapidase Batonnage Liquid**, mannoproteins are released immediately, and over four weeks, the total mannoprotein content increases by 60% compared to the control **(Figure 1)**.

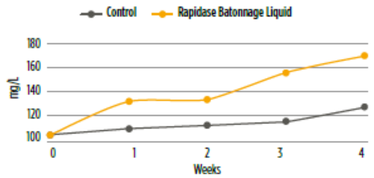

Figure 1. The effect of Rapidase Batonnage Liquid (2 mL/hL, added after alcoholic fermentation at the first racking) on mannoprotein release monitoring in a Glera wine (Italy, 2021).

AROMA IMPROVEMENT

Rapidase Batonnage Liquid impacts also the intensity and quality of wine aroma in final wines. **Figure 2** shows that after ageing on lees with **Rapidase Batonnage Liquid**, the sum of aroma compounds (acetates and ethyl esters) was highly increased.

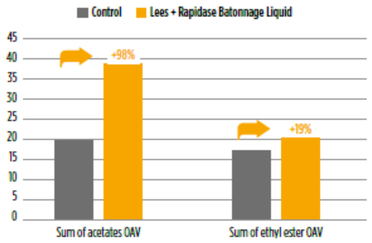

Figure 2. The effect of Rapidase Batonnage Liquid (2 mL/hL) on higher alcohol acetates and ethyl ester concentration increase after lees ageing in Albariño. VITEC (Spain) 2021. OAV stands for Odour Active Values.

OVERALL IMPACT

Sensory analysis of the wines obtained after the addition of **Rapidase Batonnage Liquid** allows one to catch up on the overall impact. In a trial on Grenache blanc from Languedoc in 2024, the addition of 2 mL/hL of **Rapidase Batonnage Liquid** during a 2-month lees ageing results in a wine perceived as more aromatic, fruitier, and smoother on the mouthfeel than the control without enzyme addition **(Figure 3)**.

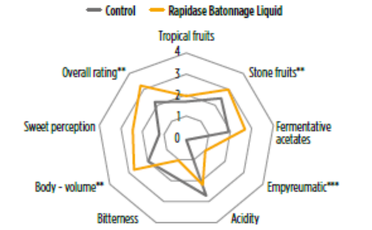

Figure 3. Sensory contribution of Rapidase Batonnage Liquid in Grenache blanc wines (2 mL/hL, 2 months contact time during ageing on lees at 15 °C). Coop winery, Languedoc (France) 2024.

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DIFFERENT WAYS TO USE IT

PROTOCOL 1
ADDITION AT THE BEGINNING OF ALCOHOLIC FERMENTATION (AF)

NEED: If you're in a hurry and just need a touch of roundness in mouthfeel.

GOAL/RESULTS: Obtain a much smoother and richer wine in mannoproteins by the end of alcoholic fermentation **(Figure 4)**.

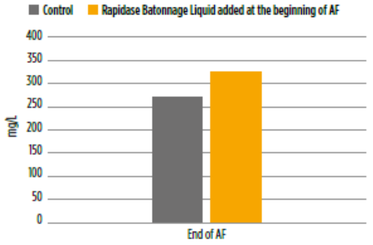


Figure 4. The effect of Rapidase Batonnage Liquid (2 mL/hL added at the beginning of alcoholic fermentation) on the levels of mannoproteins (expressed as mannose equivalent) in wine. CREA (Italy) 2020.

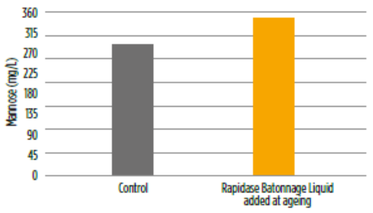


Figure 5. The effect of Rapidase Batonnage Liquid (2 mL/hL added after the alcoholic fermentation) on the concentration of mannoproteins (expressed in mannose equivalent) in the wine. CREA (Italy) 2020.

PROTOCOL 2
ADDITION AFTER AF FOR THE LEES AGEING

NEED: If you have more time and want to enhance both the aromatic profile and mouthfeel.

GOAL/RESULTS: Achieve a higher concentration of mannoproteins **(Figure 5)** by the end of the ageing, but also a more intense and complex aroma profile **(Figure 6)**.

Tasting the best tool to determine the optimal contact time. This allows the winemaker to assess the full impact on mouthfeel and aroma profile, helping them decide when to rack off.

Our recommendation is to use **Rapidase Batonnage Liquid** at 2-2.5 mL/hL. While higher temperatures may accelerate hydrolysis, they can also cause negative side effects, such as oxidation. Therefore, it is best to maintain a moderate temperature range of 10-15°C.
Alternatively, add **Rapidase Batonnage Liquid** both at the beginning and at the end of the alcoholic fermentation for finer tuning.

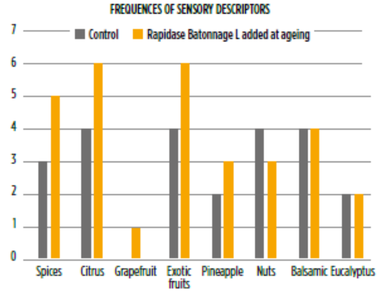


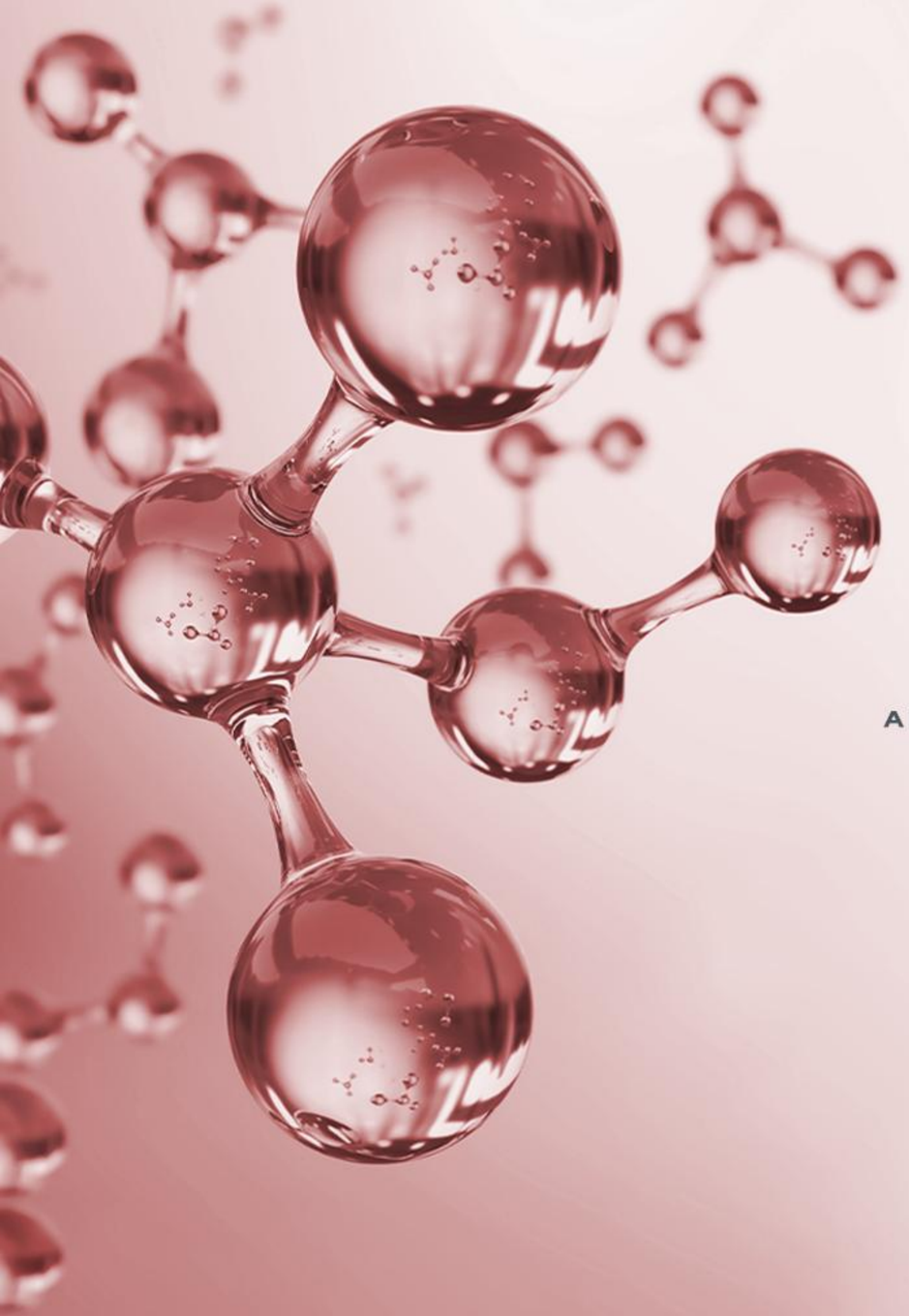
Figure 6. Sensory contribution of Rapidase Batonnage L (2 mL/hL at 15 °C) during lees ageing. CREA Asti (Italy) 2020.

CONCLUSION

Rapidase Batonnage Liquid increases and speeds up the release of mannoproteins naturally present in your lees. It enhances the aroma quality and intensity of your wines and allows winemakers to maximise the potential of their wine lees.

テイスティング

Tempranillo (Excell Iberica, Spain): Fresh berry (K5), Extra Color (E15), Control (no enzyme)



ARIGATOU GOZAIMASU
GRACIAS
THANK YOU

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