



ISSUE

#4

THE OFFICIAL NEWSLETTER OF ALL THINGS LALLEMAND BREWING!

WE BREW WITH YOU.™

Lallemand Brewing covers for you the latest trends in the industry.



Welcome to the 4th edition of this newsletter. We hope it finds you well and ready for the last stretch of the year and all the opportunities and challenges coming our way. While the business of beermaking is in full recovery in some areas of the world, others are still struggling. We, as a company, remain attentive to the situation and are focused on delivering our promises in terms of new products and technical support. The excitement for our new yeasts has happened both on the professional and the homebrew side, a segment of the market that has reached a new level since the beginning of the pandemic; we hope you enjoy reading our touching homebrew story.

The mix of science, creativity, tradition, and good times is what has always attracted me to this industry throughout my career. Yeast has always been my superstar, and to witness the change of its status in the beermaking process has been a privilege. From going unnoticed for centuries, then being revered for producing alcohol to finally being recognized as having crucial participation in the character of the beer – what a journey it has been! Yeast would not have shone without the desire of brewers to experiment and create a unique experience for the consumer. Our mission is to remain at the forefront of innovation, giving appropriate solutions to brewers - from new yeast species selected from nature to bioengineered yeast, all options are considered.

The trends that are keeping us busy looking for solutions and covered in this newsletter are the low/no alcohol beer segment and the incredible world of IPAs and aroma formation. We look forward to sharing a beer with you again very soon, in the meantime. Cheers to science and innovation!

Editorial by Sylvie Van Zandycke, Ph.D

Director of Sales and Marketing Brewing Yeasts, Bacteria and Nutrients, Lallemand Brewing

DID YOU KNOW...

The first ever known reference to “India Pale Ale” (IPA) was made in an advertisement in 1829.

Beer had been shipped to India from UK from the mid-1700s onward, with strong Pale Ales becoming especially popular. However, it was not until decades later that brewers and advertisers started to refer to these export beers as India Pale Ale, with the first known reference being found in Sydney Gazette and New South Wales Advertiser on August 29th 1829, Australia.



SEPT. 18 – OCT. 8

WBC Connect 2020
worldbrewingcongress.org

OCT. 7 – NOV. 18

Hopped Sessions
INTERACTIONS BETWEEN HOP & YEAST
tinyurl.com/sesioneslupuladas

OCT. 13 – OCT. 16

China Brew China Beverage
chinabrew-beverage.com

WE BREW WITH YOU™ ONLINE



DISCOVER SIEBEL'S NEW OPEN SESSION COURSES



Siebel Institute of Technology is proud to launch two new intermediate level offerings framed within the World Brewing Academy group of courses. In the current context, it was important for us to offer more online course possibilities, that you can start at any point in time. Both courses are offered on a new online learning platform, which allows students to begin courses at their convenience while maintaining access to dedicated educators and industry experts as they learn. Both courses offer quick, yet in-depth instruction on the most important topics in brewing, giving students a rapid route to success.

ACQUIRE PROFESSIONAL KNOWLEDGE IN 5 WEEKS

The **WBA Fundamentals of Brewing Technology** is a web-based course that covers the essential topics of beer production. The concept for the course was born from an increasing demand for shorter, intermediate-level offerings available to students with limited time and finances. The WBA Fundamentals of Brewing Technology is composed of 20 lectures. The open session format allows students to enroll whenever it is convenient, and then gain immediate access to a totally revamped learning platform. During the following 5-weeks, a monitor will be available to answer questions while the students learn the principles of beer production processes. Within a very short timeframe, students will gain a level of brewing knowledge that will benefit them immediately. 100% of the course cost can be applied towards the regular tuition fee of the tutored WBA Concise Course in Brewing Technology.

Siebel Institute of Technology is committed to enduring excellence in brewing education. New courses play a vital role in this continual progress, as educational needs and options are ever evolving. Siebel will always strive to stay rooted in its long history of quality education, while also providing brewers with instruction on current trends and techniques essential for staying relevant in the industry.

A COURSE TO SUPPORT THE SPANISH BREWING COMMUNITY

The **WBA Curso Corto en Elaboración de Cerveza** is a new **Spanish course offering** which also covers the fundamentals of Brewing Technology. This offering was created with the intent of making brewing education more accessible to the Spanish and Latin American brewing communities. **24 carefully selected lectures** provide essential knowledge in beer production at an intermediate level suitable for professionals and homebrewers alike. In 5 weeks, the student will acquire up-to-date and trustworthy information indispensable for modern brewing. Entirely online, a Spanish-speaking expert is available to answer questions via email. On completion of this course, your monetary value can be credited to an eventual application to the WBA Concise Course in Brewing Technology

Visit www.siebelinstitute.com to learn more about these 2 courses.

Product update

SOLUTIONS FOR THE FUTURE OF LOW ALCOHOL BEER



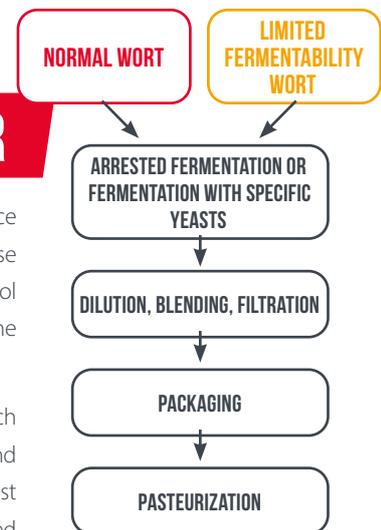
It has been apparent for some time that sales of low and no alcohol beer are rapidly increasing in popularity. Forecasts by Technavio suggest a global combined annual growth rate of 8.8% between 2019 and 2024, with key growth regions in South America and Asia Pacific. Driven by a new generation of health-conscious consumers these beers are becoming lifestyle products with large producers sponsoring high profile sporting events. Heineken Zero has just replaced Amstel as the official sponsor of the UEFA Europa League, while Erdinger Alkoholfrei sponsors a whole segment of endurance sports, and is marketed as an isotonic sports drink as well as a beer. Craft beer producers are not immune to the trend with high profile Scottish craft brewer Brewdog now producing three distinct low alcohol brands.

Production methods for producing low or no alcohol beer can be split into two categories. The first relies on technology to remove alcohol from a conventionally produced beer and includes membrane-based techniques such as reverse osmosis, as well as strategies based around low temperature evaporation. The second category focusses on making use of novel or existing microorganisms in conjunction with arrested

fermentation or procedures to produce wort of limited fermentability. These produce a naturally lower alcohol content in the resulting beer without the need for costly new equipment.

Lallemand is actively pursuing research into methods based around this second category. We recently published a best practice document for producing limited fermentability wort using the high temperature mashing technique. The resulting wort can be fermented with maltotriose negative yeast strains from within our collection such as **LalBrew Windsor™** and **LalBrew London™** to produce beers with a final alcohol content of between 0.5 and 1.5%.

Research continues into producing a yeast strain that can produce alcohol contents lower than 0.5% abv while also reducing the flavour criticisms which are often levelled at the low and no alcohol beer segment.



Low alcohol beer production using restricted fermentation techniques

ENZYMES IN BIOTRANSFORMATION

A description of β -glucosidase & β -lyase



"As brewing scientists and brewers look deeper into the drivers of hop aroma in beer, we realize that it is not simply a process of extracting hop oil from hops and transferring it to beer. There are physical and biochemical interactions with and by yeast that also impact hoppy aroma in beer. While hop oil is the main source of hop aroma, there are water-soluble components that can be acted on by yeast-derived enzymes which contribute to beer aroma. As such, yeast selection and concentration are tools a brewer can use in combination with hop variety and timing of hop addition to impact hoppy aroma in beer."

Tom Shellhammer, PhD (Oregon State University, USA)

Biotransformation is a buzzword nowadays in brewing, which can be sometimes confusing due to the complex biochemical processes involved. It is defined as 'the chemical modification made by an organism on a compound'. Although this term is commonly used in pharmacology and toxicology, from the brewer's perspective, it refers to the interaction of two ingredients used in brewing: yeast and hops.

Brewing yeast produces two different enzymes during fermentation: β -glucosidase and β -lyase, which will be discussed in the following lines, both playing a role in biotransformation with the release of aromatic compounds or volatiles.

The role of β -glucosidase

β -glucosidase is an enzyme able to cleave glycosides, a compound found in hops that does not contribute in beer aroma per se. As a result of that, the glycoside molecule is broken via hydrolysis into two parts: a monoterpene alcohol and a glucose. An example is shown in **Figure 1**, where a non-volatile terpenyl glycoside is hydrolyzed through the β -glucosidase activity resulting in the release of a monoterpene alcohol (linalool) and a glucose molecule. There are many monoterpene alcohols which impart diverse flavors, such as citrus, fruity or floral, and higher levels of terpenes are associated with greater overall hop aroma intensity (OHA).

However, β -glucosidase activity depends on each yeast strains genetic background. The addition of exogenous and concentrated β -glucosidase enzymes was studied (Sharp et al., 2017), and demonstrated the interesting potential to enhance biotransformation reactions.

The role of β -lyase

β -lyase is an enzyme responsible for the release of volatile sulfur compounds called polyfunctional thiols, or mercaptans, which are usually associated with tropical aroma. Thiols are aromatic compounds found in hops and represent about 1% of the total hop oil content. Despite of their low concentration, their contribution to aroma in beer is significant due to their low detection threshold. In addition, hop also contain thiol precursors which does not impart any flavor, but through β -lyase activity these highly aromatic compounds can be released and, therefore, perceived by the consumer. An example is illustrated in **Figure 2**.

Biotransformation is something fascinating although it is yet not fully understood due to its complexity. However, it is a fact the enzymes detailed above play a role during fermentation by altering the hop oil composition, and so the organoleptic profile of the resulting beer. Brewers might also consider the addition of exogenous enzymes to promote biotransformation - such as 'Aromazyme', the soon to be released β -glucosidase product from AB Vickers.

REFERENCES

Sharp, D. C., Steensels, J., & Shellhammer, T. H. (2017). The effect of hopping regime, cultivar and β -glucosidase activity on monoterpene alcohol concentrations in wort and beer. *J. Inst. Brew.*, 123, pp185-191.

Montasell, J. (2020). Biotransformation: A story of yeast, hops and enzymes. *IBD Brewer and Distiller International Magazine*, August 2020, pp26-30.

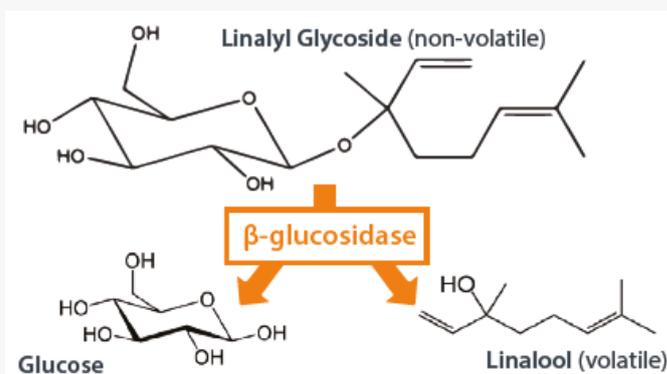


Figure 1. Terpenyl glycoside hydrolyzed by β -glucosidase releasing a monoterpene alcohol (linalool) and a glucose molecule.

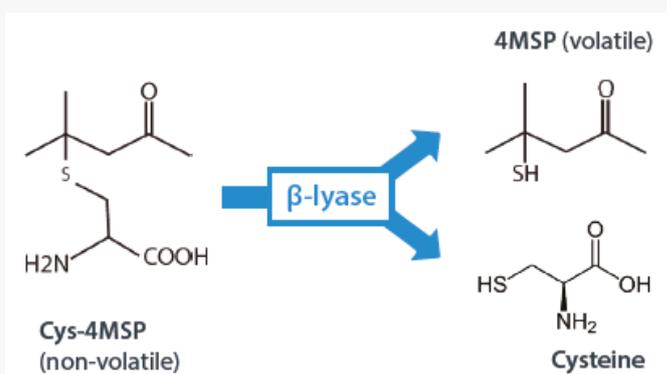


Figure 2. The thiol 4MSP is released from a non-aromatic cysteinylated precursor.

by Joan Montasell, MSc, Dipl. Brew ,
Lallemand Brewing Technical Sales Manager
Spain & Portugal





Product update

VERDANT IPA GOES GLOBAL

This new **LalBrew Verdent IPA™** strain represents a real first for us, a very close and direct collaboration with a leading brewer to produce and dry their house yeast and make it available for all brewers to use. This exciting project has been 3 years in the making and I am delighted to tell you more about it.

Verdant Brewing Co. (Falmouth, UK) value this strain as being totally unique and suitable for a broad range of IPAs and other beer styles, contributing prominent notes of apricot and undertones of tropical fruit and citrus merge seamlessly with hop aromas. Moreover, dozens of breweries around the world have conducted very successful pilot brewing trials with **LalBrew Verdent IPA™** and let's take a look at some...

Firstly, to Spain, where trials focused on modern hop forward pale ales and IPAs. We are extremely grateful to all the trials and feedback and we can see some of the exciting beers in final pack below.



Aran León, La Pirata was particularly impressed with the results in a recent collaboration with UK based Pollys Brewing Co, describing their experience; *"We first tried LalBrew Verdent IPA™ yeast for our Hop Wave NEIPA. The aroma profile was a blast even before the dry hop. Since then, we are using this yeast for all our hazy IPAs!"*

Homebrew Update

HAVE YOU EVER HAD A SENIOR MOMENT? WE BET YOU'LL WANT ONE!

Welcome to The Overlook, a Retirement Community that serves residents sixty-two years and older. It is situated on 450 wooded acres in the rural town of Charlton, MA.

In 2016, Steven Dragon and his wife Dolores moved into this enclave, in part because The Overlook supported his idea of creating a resident-run home brewing club. Thus, they began the "The Overlook Brew Crew." Steve, a homebrewer for almost forty years, is the resident Brewmaster. Richard Wilson, a retired graphic artist, became the "Senior Moment" label designer. The Overlook Brew Crew consists of forty men and women, the average age over eighty.

Since 2017, The Overlook Brew Crew has brewed twenty-nine different styles of beer. The members eagerly absorb the information provided by Steve, which relates the history and details of each style they will be brewing. As word spread about this endeavor, Steve and the Overlook connected with Boston's WCVB Channel 5 TV. Shortly after, Ted Reinstein arrived with his crew to film an episode for the "Chronicle." He introduced the episode by saying, *"I've just had a Senior Moment, and I really enjoyed it!"*

Back in the UK Unity Brewing CO (Southampton) were one of the first to trial the new strain brewing a range of modern hop forward beers with fantastic results but also tapped in to the versatility of this strain and brewed some dark beers including a full and smooth oatmeal stout and a big and bold Imperial Stout pushing all the way to 10.5% ABV, showcasing how suitable this strain is for dark beer styles and contributing to body and balance.

Head Brewery Jim Fullager described some of the results from the initial trials *"We really like this strain, it performed reliably and produced delicious beer that achieved characteristics we have previously struggled to get in beers brewed with dried yeast. We intend to use this as our house yeast for all pale ales, IPAs and porters/stouts. I think it would work well in the whole spectrum of IPAs from NE to West Coast style, where the attenuation is so broad but controllable, I think this would suit a diverse range of styles."*



This is just a snapshot of the immense amount of characterisation work that has been made possible by our partners and collaborators in all corners of the globe.



"Weaving these brews together has a common component – yeast," says Steve. *"I utilize Lallemand Brewing yeasts almost exclusively because of their high quality and variety, and our club can rely on a successful brewing process using them."*

Though Covid-19 curtailed brewing activities, the residents' enthusiasm, combined with ingenuity, overcame all obstacles for brewing to resume. Milling occurred outdoors; smaller groups assisted with the brewing, bottling, and labeling.

During an outdoor concert at The Overlook's Tower Circle, our latest kegged American Amber Ale was served to all residents, garnering unanimous kudos. Additionally, The Overlook Brew Crew created a Berliner Weisse made with Lallemand Brewing's **WildBrew Philly Sour™** yeast. Now bottled, The Overlook Brew Crew members anxiously await delivery to proclaim, "I just had a Senior Moment, and I really enjoyed it!"



**We want to thank Sue B Hagberg and Susan Siopes for this story.*

