



# BrewTimes™



AUGUST 2022



## Balaji Enzyme and Chemical Pvt Ltd

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## Introducing BrewTimes :

**We M/s Balaji Enzyme & Chemical Pvt Ltd, are pleased to bring to you our August 2022 month edition of BrewTimes.**

**We would like to use this platform to introduce our association with BetaTec, UK for their natural solutions for ethanol recovery in grain and molasses distilleries. The product is revolutionary and unlike any in the market is 100% natural and antibiotics free. Vitahop series of products helps in ensuring optimum yield and keeps the yeast healthy all naturally.**

**We are extremely proud of announcing our association with IIT Bombay Research Park. We have begun a journey together to work on sustainable, reliable and innovative solutions for the Food and Beverage Industry.**

## About Our Company :

**We M/s Balaji Enzyme & Chemical Pvt Ltd are a leading supplier of Enzymes, Filter aid, Yeast, Hops, Processing aids, Clarifiers and food fortification products to breweries, distilleries, malt extract industry, starch industry, juice and beverage industry, and other food industry.**







# HopHaze®

Great haze stability and  
flexibility from 100% hops.

HopHaze® is an innovative brewing solution that's flavorless, odorless, and completely hop derived. Incredibly easy to dose, HopHaze® lets you achieve the exact level of haze you want—and remains stable for the life of your beer.

100% hop-derived, no labeling issues  
A stable haze that lasts the beer's entire shelf-life  
Efficient, easy to dose before the bright tank  
Use a little or a lot without impacting flavor or aroma

## IT WILL CHANGE THE WAY YOU THINK ABOUT SHIPPING AND STORING HAZYS.

I really liked that it's 100% hop based, so there are no additional ingredients to list on your beer label. And when we tested it in different storage conditions nine months later, the beers were hazy as can be. I think HopHaze® has the potential to move the industry forward.

– Joe Casey, Brewmaster, Anheuser-Busch Brewers Collective

READY TO TRY HOPHAZE®?

Ask your HAAS® Representative  
Learn more at [johnihaas.com/hop-haze](http://johnihaas.com/hop-haze)



HAAS®

| BarthHaas®





# HopHaze®

Great haze stability and  
flexibility from 100% hops.

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**CASE STUDY** ANHEUSER-BUSCH BREWERS COLLECTIVE

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**HAAS**®

| **BarthHaas**®



## FEATURED COLLABORATORS



**Joe Casey | Anheuser-Busch  
Brewers Collective**

Joe Casey is a brewmaster with over 25 years experience in small- and large-scale brewing operations. Currently, he oversees North American technical brewing support for craft and hop quality at Anheuser-Busch. His expertise spans from brewing raw materials and process aids, yeast and fermentation, finishing, quality, sensory, packaging, food safety, hard cider, hard seltzer, innovation, and procurement.



**Dr. Phil Chou | John I. Haas**

Phil Chou is Director of Brewing Solutions at John I. Haas. He has extensive experience as a R&D chemist and fermentation scientist, using applied chemical principles to help improve the brewing process and ensure technical success of innovative hop products for HAAS® customers.



## Haze stability that's clearly better.

HopHaze® is a new brewing solution from John I. Haas (HAAS®) and BarthHaas® designed to create remarkably stable haze in beer. It's an all-natural, 100% hop-derived product that's added to beer after filtration before the bright tank/pre-packaging. It's flavor-neutral and will not impact the flavor or aroma of finished beer. Year-long trials have shown that HopHaze® will last the entire shelf-life of the beer, without settling out of solution.



# HopHaze®



## THE STABILITY CHALLENGE

In recent years, hazy style beers New England IPAs, Hazy IPAs, Juicy IPAs, and more have exploded in popularity, helping propel the craft industry to new heights of success and winning over a generation of new beer drinkers along the way. While there are many ways to achieve haze in beers, maintaining the stability of that haze during packaging, distribution and storage can be daunting to say the least.

One of the challenges of hazy IPAs, or any hazy beer style, is to make a stable haze that doesn't settle out across time, said Joe Casey, a brewmaster with Anheuser-Busch Brewers Collective. Nobody wants their beer to look like a snow globe, and nobody wants to experience a bunch of sediment either. Haze stability has been an ongoing technical challenge for brewers for quite some time.

Casey got his start in the brewing business at Widmer Brothers, known for their flagship beer, Hefe, the original beer that defines American Hefeweizen.

I have a lot of history with haze, he laughed. For Hefeweizen, we had a process down to where we were able to manage the haze really well, and it was a pretty stable haze for a timeframe that we found acceptable.

Over time, as Widmer became part of the Craft Brew Alliance (CBA) and then part of Anheuser-Busch Brewers Collective, Casey was involved with many different kinds of hazy products, across many different breweries and brands. He began to look more seriously at haze solutions.

We had our eyes out for something to help with haze for a while now, Casey noted. Other products we've tried, they don't work very well in hazy IPAs, so we were looking for an alternative.

In one of the many and regular technical conversations about hops and beer that Joe has with Phil Chou, Director of Brewing Solutions at HAAS®, Phil suggested a new product that would ultimately become known as HopHaze®.

## THE HOP-BASED SOLUTION

One of the things I really liked about it was, it's 100% hop based, said Casey. There are other products out there that are natural, but they're not made from hops; something already in beer. So you have to think about that when you talk to consumers and when you think about how you're labeling your beer. Some methods that brewers consider might break away from the traditional ingredients used in beer, but HopHaze® is hop based, so that really attracts me.

**"One of the challenges of hazy IPAs, or any hazy beer style, is to make a stable haze that doesn't settle out across time. Haze stability has been an ongoing technical challenge for brewers for quite some time."**

The other consideration was long-term stability. Anheuser-Busch Brewers Collective ships hundreds of thousands of barrels of beer each year, to distributors throughout North America. So any solution they found needed to be able to scale and stand the test of time.

As part of our initial trial, we collected an Imperial IPA into clear bottles to test in different storage conditions so that we could easily, visually, monitor beer haze over time. And that's really when we started to be sold on the effectiveness of the product. Casey explained.

We let those clear bottles sit in cold, room temperature, and warm forced conditions for nine months. Across

that time the haze remained homogenous, didn't flake out, and didn't sediment. There were also no unwanted flavor impacts. There literally was virtually nothing on the bottom of the bottle indicating that nothing had settled out.

Casey was excited. With haze...let's just say gravity usually wins. So if you can have something that doesn't drop out over time, you're in a pretty good position if you want to make something hazy.



## SENSORY TRIALS

Having a long history in hazy beers, Casey was not easily convinced. Anheuser-Busch Brewers Collective needed to see what would happen when things scaled production levels across different types of beers and different brands.

We took time to find an optimal dose rate, Casey said. We asked, What happens if you don't use enough? What happens if you use five times more than you're supposed to? What's the normal process and product variation? We wanted to understand those effects and impacts to negative brainstorm the process until we felt we had it all sorted out.

## A GREAT BREWING SOLUTION

The ultimate test of any new product is, would you recommend it to a fellow brewer?

Yes, absolutely, said Casey. I fully realize, if you're at a smaller-scale operation and you're doing draft only, serving beer in your own pub, not distributing around town or in your region, you are dealing with different haze realities that live in a shorter timeframe. But I think your perspective changes when you get towards the other end of the spectrum and have requirements for many months of haze stability in many different conditions and package types.

**"With HopHaze<sup>®</sup>,  
I think we've found  
another reason to love  
hops. I think HopHaze<sup>®</sup>  
is something that has  
the potential to move  
the industry forward."**

The bigger a brewery gets and the bigger their geographical distribution footprint is, the different types of containers they're using bottles, cans, kegs the shelf life they're looking for, pasteurization, everything kind of changes. Having different kinds of tools is really helpful.

Casey continued, "You can make a stable haze in a draft-only beer, and it looks great for three weeks at your pub. But when it takes you three weeks to get the

beer from your place to distributor, and then another couple weeks to get from the distributor to the account, and then they don't tap it for another week on top of that, most hazy beer is going to settle out and you're going to have some separation issues.

With HopHaze<sup>®</sup>, says Casey, "I think we've found another reason to love hops. I think HopHaze<sup>®</sup> is something that has the potential to move the industry forward."

**To learn more about HopHaze<sup>®</sup>, visit our website,  
contact your local HAAS<sup>®</sup> sales representative,  
or your favorite HAAS<sup>®</sup> Distribution Partner.**

[johnihaas.com/hop-haze](http://johnihaas.com/hop-haze)

### ABOUT ANHEUSER-BUSCH BREWERS COLLECTIVE

Brewers Collective is the craft business unit of Anheuser-Busch, which is advancing the beer category by bringing together a shared commitment to quality, communities and innovation with a mission to energize how people view, consume and experience beer.



### ABOUT HAAS<sup>®</sup> & BARTHHAAS<sup>®</sup>

John I. Haas is a proud member of BarthHaas<sup>®</sup>.

With branches in Germany, the USA, the UK, Australia and China, BarthHaas<sup>®</sup> conducts business on every continent. It is a world leader in breeding, growing, processing, and marketing hops and hops products. The group's portfolio also includes storage and logistics services, hop research and development, and application technologies for the brewing industry.







**Vitahop®**

**Increase profits in  
BIOETHANOL...naturally**

**Vitahop®** is a range of natural hop extracts, ideal for production of bioethanol from a range of raw material feedstocks, as they protect yeast from bacterial growth, and their acid by-products, during fermentation processes. When used as part of a planned process regime with regular additions, bacterial infections do not develop and spoil yeast fermentations.

When infections do develop, they can quickly get out of control and disrupt production, potentially causing substantial losses and lost revenue. By controlling bacteria and preventing bacterial growth, catastrophic infections can be a thing of the past.

**Vitahop®** is used in both continuous and batch fermentations. It helps ensure healthy, vitalised yeast growth and during fermentation suppress gram positive bacteria. If bacteria are allowed to prosper, they will compete with and eventually inhibit the yeast, slowing fermentation sometimes to a complete stop, resulting in a “stuck” fermentation. Bacteria will also use up valuable feedstock producing organic acids such as lactic acid, further reducing ethanol yields. Prevent this happening with **Vitahop®**.



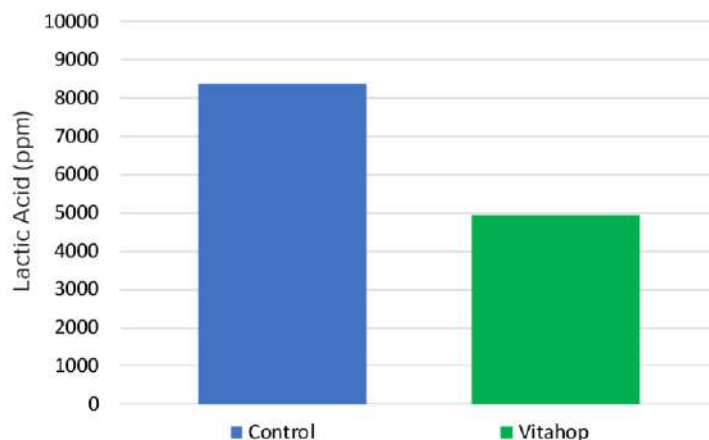


## Key Benefits of Vitahop®

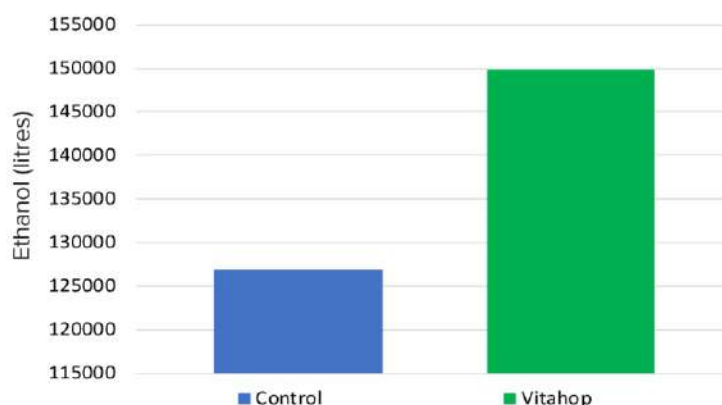
- Maintains optimum ethanol yields
- Ensures reliable fermentations
- Keeps yeast healthy
- Controls bacteria
- Demonstrated benefits in ethanol production plants worldwide
- Safe and natural, easy to use
- Safe DDGS for animal feed
- A natural alternative to antibiotics



Effect of Vitahop® on Average Lactic Acid Production at Fermenter Drop



Effect of Vitahop® on Ethanol Production



Unpublished data BetaTec 2015



BetaTec is the first company worldwide specialising in the application of hops and hop-derived compounds for use in “beyond brewing” industries. Our product portfolio includes natural fermentation aids, antibacterials, flavours and functional ingredients. Our key business areas are alcohol, yeast and sugar production. All BetaTec products are accompanied by on-site support, process optimisation and consulting.

Please contact our technical experts to learn how Vitahop® can help you sustain improved ethanol yields.

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**BetaTec®**  
hop products

“Transforming your world with our natural hop solutions”



## BetaStab® XL

## Reduce your sugar losses ...naturally

### BetaStab® XL controls problematic Gram positive bacteria found in sugar extraction

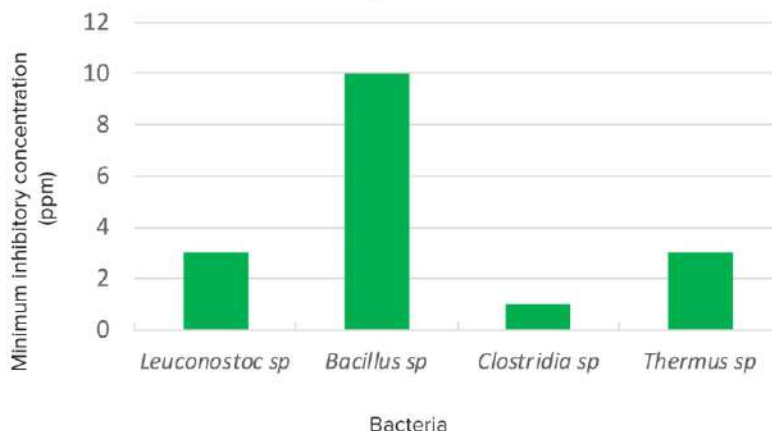
Microbial sugar losses are a major problem in sugar production resulting in lower yields, increased processing problems and higher impurities such as lactic acid and dextran.

The hop product BetaStab® XL is a natural food processing aid. For more than 10 years it has proven effective at controlling bacteria in factories worldwide and is a cost effective alternative to synthetic biocides.

Our product can be applied during the production of sugar from either beet or cane. It is an aqueous solution of natural hop acids and is active over a wide range of temperatures and pH values.



Lab measured minimum inhibitory concentration of  
beta acids against various bacteria

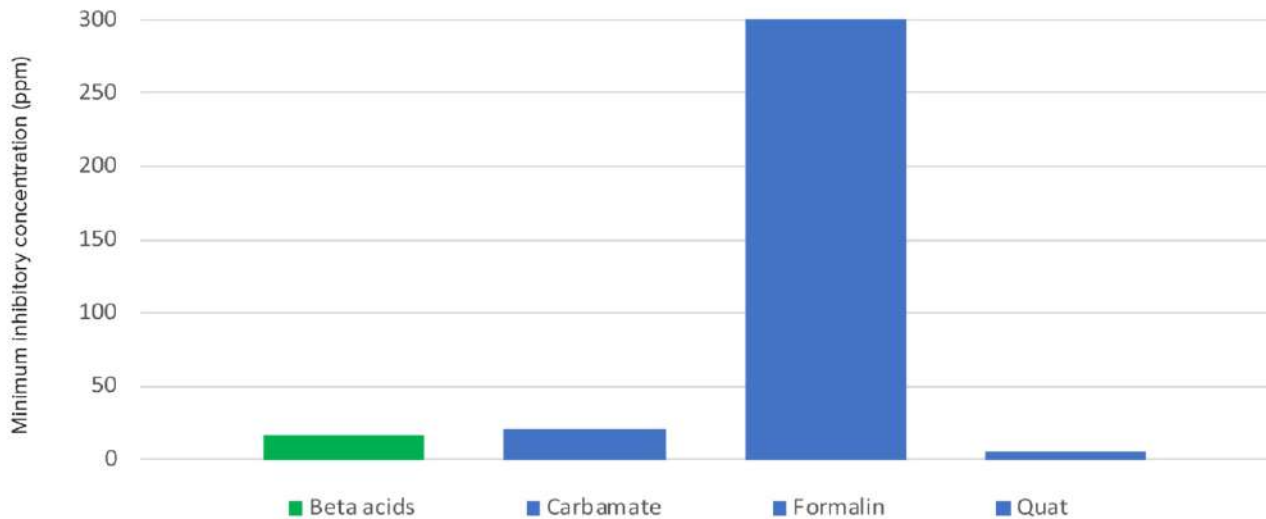


### Key advantages of BetaStab® XL

- Active against bacterial contamination at ppm levels. Immediately stops bacterial growth
- Control of lactic acid, dextran and nitrite production
- Effective over a range of pH values and temperatures
- Demonstrated activity in sugar cane mills and sugar beet factories worldwide
- Cost effective alternative to synthetic biocides
- Can be used in thick juice storage, prolonging storage times
- Products are water based for ease of dosing
- Safe to handle and non-corrosive to equipment
- Coproducts suitable for animal feed
- Residues are beneficial for yeast and ethanol fermentation processes



### Comparison of Biocides against *Bacillus stearothermophilus*



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All BetaTec products are accompanied by on-site support, process optimisation and consulting.

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**BetaTec®**   
hop products

“Transforming your world with our natural hop solutions”

# BEER BREWING – MONITORING & CONTROL USING AI TECHNIQUES



**BIJAY BAHADUR**

**B.Sc. (Hons.); B.Tech. (Gold Medallist); PGDEE; FIE;  
Chartered Engineer (India) PE (ECI); LMIICHe; LMAFST (I)**

## Introduction

Artificial intelligence (AI) and machine learning (ML) technologies have started playing a key role in several industries. Research and development in this field are making steady progress and venturing into new industries and covering new tasks. The brewing industry is one such industry.

Biological processes in beer brewing, are among the challenging ones to establish control, due to the complexity of the biological raw materials and the use of living organisms, such as yeast, as processing agents. It is subject to alteration stemming from the variation in the yeast, a living organism, and due to the complex raw materials of biological origin. The variability may manifest in changes in the fermentation process or in the beer quality. Thus, there is a need for tools, both analytical and computational, to assist in the monitoring the process and to keep it in a desired course. The breweries are forced to make daily measurements in order to observe the course of the fermentations. With reliable predictors such as intelligent software tools as well as software analysers for the fermentation monitoring and control one could manage with fewer measurements especially when an early warning gives the operators time to make corrective actions.

The brewing industry, like many others, started off with using AI in their functions such as marketing and supply chain. It helped them to identify the right audience and target advertisements. AI was used to collect real-time information on how people reacted to their creatives and change them to achieve maximum impact. Machine learning is also being used to deal with distributors. It helps to identify the right time to send and the right amount of stock to send to a particular distributor. It also arrives at the best credit terms after analyzing all risks.

However, these were supporting functions. The effort now is to incorporate AI in one of the most crucial functions, the brewing of beer. This lies at the crux of the industry.

AI is being used in different capacities by different producers in the industry. While many are still at the research stage some have hit the market.

Using Artificial intelligence is becoming a paradigm in the beer brewing industry to regulate the food safety standards and to find the award-winning flavors. The recent survey made by a Data Analytics Company called Global Data, 38% of the consumers in the Asian-Pacific region conveyed that they were enjoying the unparalleled recipe and stay always influenced.



## AI to determine the recipe

While brewers have been experimenting with the recipe to brew beer over years, AI can help them to incorporate customer feedback effectively. Some chose to use a simple algorithm of comparing recipes of 10 best and 10 worst beers in the market to arrive at an optimal one.

## Brewery fermentations

With a reliable predictor- artificial intelligence (AI)-based techniques as well as software analysers for the fermentation monitoring and control one could manage with fewer measurements especially when an early warning gives the operators time to make corrective actions.

The main fermentation process starts with aerating the chilled wort and addition of yeast to it. The yeast starts to consume the nutrients contained in the wort, in order to stay alive and grow. At the same time, the yeast produces alcohols and other metabolites. The sugar content of the wort is the primary measurement by which the course of the fermentation is followed; the main fermentation is deemed to end when the sugar content falls below a predefined concentration level, so that only a small amount of fermentable sugars remain. The sugar content of the wort is expressed by the specific gravity of the wort; the wort gets lighter as sugar is converted to alcohol and other compounds.

The traditional batch main fermentation phase takes about 6-7 days and it is followed by a lagering stage, where some undesirable compounds are further converted. Depending on the production line the maturation takes place in the unitank or in a different tank (SV). In the end of fermentation, the yeast is cropped, and used for another pitching. Fermentation is controlled by regulating the temperature, oxygen content, and the pitching rate; i.e., the amount of yeast put into the fermentation tank. The temperature has a great influence on the rate and extent of fermentation and on the quality of the final product. The yeast growth can be controlled by the oxygen content in the early stage of fermentation, after pitching. In addition, the course of fermentation is affected by other factors, such as the wort composition and the yeast condition. Ideally, these factors should be constant, so that the predictability of fermentation is maintained. In practice, neither the wort composition nor yeast condition is static. The natural variation of malt induces some variations to the wort composition, although such variations can be diminished by re-planning the mashing recipes.

The condition of the yeast is a more complicated issue. Traditionally, it is required to observe the vitality by laboratory analyses, i.e., the percentage of live and dead cells before pitching. However, these methods do not tell anything about the viability of the yeast, i.e., the fermentation ability of the cells. The common practice is the yeast to be used many times before disposal. The ability of the yeast to ferment depends to a great extent on the physiological state of the yeast. For example, new yeast typically behaves differently from yeast that has been recycled many times. Also, yeast that has been stored for long periods between fermentation is often less vital.

Ideally, the brewery should be able to modify the fermentation process so that the variability of the yeast and wort would be cancelled out. So, if the viability of the yeast is low, the brewery could increase the pitching rate or slightly elevate the temperature or oxygen content. A recipe planner will be well suited to the similar tasks, although a reliable estimate of the yeast vitality and viability is needed. However, it can be expected from the above introduction, no single analysis exists that would permit prediction of the time of fermentations to any reasonable degree.

## Monitoring and control of beer fermentations using AI based techniques

The modeling and control of biotechnological fermentations using AI approaches, neural networks and its hybrid intelligence methods is a well-studied problem. However, the models from the biotechnical

literature cannot be directly transferred to brewing, and is very limited, including mostly amounts and timing of transfers of raw materials and yeast, process temperatures and the manually taken gravity (sugar content) measurement.

Beer brewing monitoring and control by using AI-based software tools and knowledge-based methods are an answer to the world to establish a knowledge-based bio-economy. Automatic control and monitoring of technological processes accelerate introduction of new class of knowledge-based system - intelligent software analyser, known also as software sensor systems for inferential or indirect measurements. Preparation stage of beer fermentation includes production of optimal content of substrates and pitching yeasts. With the methods of artificial intelligence (AI), software analysers are synthesized for defining:

- Concentration of various kinds of yeast cells (living, death, weak, budding)
- Budding energy
- Fermentation activity of brewing yeasts.

Initial stage of brewing fermentation, obtaining of industrial strains with the required features is significantly dependent on synthesis of ergosterol and dissimilation of glycogen- substances whose content is traditionally defined by biochemical analysis, requiring for preliminary preparation of samples and equipment. In order to shorten time for analysis, for labor and staff savings and mainly to achieve statistical results of higher accuracy in comparison with the accuracy of biochemical analysis, the software analysers for real-time measurement of ergosterol and glycogen. Synthesized software analysers show high accuracy and both are sensitive to the cultivation conditions (varying initial concentration of the dissolved oxygen content).

It is well known that biochemical analysis of beer quality factors is time and labor consuming. Introducing knowledge-based software tools in the practice when the technology is established for a long time and will not change is an alternative method to measuring of different parameters and is a low-cost solution. Such software tools are not only profitable but equipped with the software system for fault detection and isolation is very efficient in the automatic control of beer brewing.

### AI to brew beer

AI is being used to predict the quality of beer by analyzing the data collected during brewing about CO<sub>2</sub> levels in real-time. Data is collected at different stages. Some companies are also attempting to use data to predict fermentation. Real-time analysis can help save a lot of effort and improve the accuracy of the process. This accuracy can help the industry to save on energy, costs and time.

The Beer brewing process is seen as a mix of art and science. While the infusion of AI in the process of brewing can add precision and take care of the scientific side, it allows the brewers to experiment with their recipes and develop the craft of beer brewing.

### Conclusions

The rising demand in the beverage industry urges the industries in employing advanced technologies like AI to normally have an edge over its brewery counterparts. It gives the brewer, the luxury of developing new recipes in the market with updated crowd ratings and feedbacks. The proper collaboration of conventional and modern tools similar to AI can deliver the assurance of good quality beer and leads to rapid advancements in the brewery sectors.

Computational intelligence-based technology provides a mechanism by which human expertise and learning capacity can be embedded and implemented to solve problems; provide assessment of process from input data; and provide an intelligent control.



The combination of both analyzing methods- conventional and modern AI-based software analysers offer to the producer of high-quality beverages a double assurance for the quality of products.

Despite all the current trends surging the value of AI, the brewer should be aware of an exorbitant trend. Brewers must consider the fact of hardships arise from incorporating AI into a brewery. They must be ready to pay astronomical value for using AI and avoid mismatch regarding the selection of in-built house technology or buy it. Integrating Artificial intelligence with the existing technology may be way daunting in the competitive market.



# UNDERSTANDING CONCEPT OF TOTAL CELLS NEEDED AND ESTIMATING QUANTITY OF YEAST TO PITCH IN WORT



SAURABH N. PERKAR

**B. Tech. Chemical engineer**  
**Head brewer**  
**Alchemy microbrewery, bangalore**

"Yeast" a very important ingredient in brewing which is not only responsible for converting sugar to ethyl alcohol but wide range of esters, aliphatic and aromatic compounds depending on strain of yeast used.

As a brewer we been using many type of yeast strain and experimenting with different fermentation temperature to achieve desired flavour character from yeast.

But many of the time a question might have pop up in our mind

"How much quantity of yeast to pitch exactly?"

well we will have a look at this topic by considering some yeast available with balaji enzyme and chemicals pvt. ltd.

There are so many parameters we need to consider for ales and lager yeast to understand total cells needed. total cells needed depends on ideal pitching rate, volume of wort and its gravity.

## **Lets have a look at some ideal pitching rate**

Ale : gravity less than 15 degree plato =  $0.75 * 10^6$

Ale : gravity 15 - 19 degree plato =  $1 * 10^6$

Lager : gravity less than 15 degree plato =  $1.5 * 10^6$

Lager : gravity 15 - 19 degree plato =  $1.75 * 10^6$

Ideal pitching rate vary as per yeast type and its cell required to ferment per ml per plato.

Once we consider an ideal pitching rate we have to calculate total cells needed using volume of wort and gravity of wort. and once we have value of total cells needed we need value of yeast cell. this value is provided with yeast lab report.



## lets have a look at some yeast

WA 18 an ale yeast have value of  $6 * 10^9$

W 38 an ale wheat yeast value of  $5 * 10^9$

BF 16 a lager yeast value of  $8 * 10^9$

CN 36 an ale yeast value of  $8 * 10^9$

CS 31 an ale yeast value of  $8 * 10^9$

so once we have this both values with us we can calculate grams of yeast to pitch as per volume and gravity. objective of this all is to get to know exact amount of yeast to pitch.

And as we know for some beers we need to underpitch and overpitch also to get desired flavours and clean yeast fermentation. to achieve this we should know what's total cells needed and how to use it calculate quantity of yeast to pitch.



# INDIAN WINES, TOWARDS THE GLOWING FUTURE



**SIDD BANERJI**

**Founder, CEO,  
Apex Wine Club India,  
Mumbai.**



Started during the '60s of last century, Indian wines, crossing around 50 years is today at a formidable position to face the world.

Golconda, Shaw Wallace, Chateau Indage are the names who formed the base. Grovers were one of the pioneers who are the only who are still carrying on their consistent experiments to improve, production and nation wide marketing.

Followed immediately by the only, Indo Italian brand, the unique in the wine arena of India, the Fratellis.

While Nasik soon came up but later than wine valleys of Karnataka, rose to it's leading position. Local brands like Reveilo, York, Good Drop, 7Peaks came up. The other unique Nipha Winery, Grape Berry and Wagh Winery were no less of quality, promise and determination.

Much could be talked about the strength and achievements. Awards and accolades won by present day wine producers of India are laudable.

While Nasik kept rising with her glory, the other illustrative region is Karnataka's 3 wine valleys, housing, Big Banyan, SDU, KRSMA as the reputed locals. Sula, Grover are there too apart from their formidable set ups at Nasik.

The only solitary production unit is that of Fratelli in Akluj, a southern Region of Maharashtra state within Sholapur district.

At the commendable height

Sula rose steadily right from start and has been continuously improving, increasing and today is more of an institution for the country.

Though fruit wines occupy not more than 6-8% of the total wine business, in the world as well in India, the social impact is noteworthy, countrywide.

From the north eastern end, Arunachal Pradesh where the nationally honoured young woman entrepreneur, Tage Rita prepares her immensely popular Quwi wines, Akalpiti Prabhune of Rhythm, Pune, keeps his strong footsteps, in making various fruit wines, from berries to mango, with sharp eye on quality and service.

While Nilesh Jadav the consultant, wine maker at Himachal is creating his fruit wines on regular basis, Priyanka is producing her renowned Chikoo wines in Bordi, Maha. The company is expanding with its production base in Delhi and Karnataka.

Lot more are in the side of meads like Cerana Meads and Moonshine Meads from Nasik and Pune respectively. Other two fast growing spirit producers out of fermentation and not distillation.

The last but not least to be said about the wines and allied spirits, Feni, Mohua and Port wines of Goa. We have a huge store of traditionally carried down knowledge, methods, blends and preparations in Goa's liberal society, which promises substantial industrial scope, not only for Indian market but also for foreign lands. Entrepreneurs like Mario Sequira, Solomon Diniz have been causing ripples, worth noticing.

Yes, India is geared up to rise heights, in wines and its allied beverages worth international positioning.





# GUAVA WINE



AKSHAT JAIN

**Business Development Manager-Craft Brewing**

Guava is easy to culture, possesses high nutritive value and its products like juices, beverages, nectars etc. are largely appreciated by the consumers. Guava juice requires „chaptalization so as to adjust its Brix and prepare a perfect wine out of it. The chaptalized juice (“must”) is treated with pectinase or a combination of enzymes and fermented with traditional yeasts at a temperature range of 22 to 30°C and inoculum size of 6 to 11% (v/v). The addition of N and P improves ethanol production and quality parameters of guava wine. Racking and ageing of guava wine also improves the sensory and organoleptic characteristics of guava wine.

## INTRODUCTION

The nutritional role of wine is important since its average contribution to total energy intake is estimated to be 10 to 20% among adult males (Macrae et al., 1993). During the past few decades, grapes have been the main fruit for wine production. Despite that, several studies have investigated the suitability of other fruits as substrates for the purpose of wine production (Okunowo et al., 2005; Joshi and Attri, 2005). Moreover, the seasonal availability and high cost of grapes in the tropical regions has also necessitated the search for alternative fruit sources in tropical countries (Alobo and Offonry, 2009). There is abundance of tropical fruits in India which includes guava, watermelon, pineapple, plum, orange etc.

These fruits are highly perishable, being susceptible to bacterial and fungal contamination, thus leading to their spoilage, mechanical damage and over ripeness

## GUAVA AS A WINE SUBSTRATE

Guava (*Psidium guajava* L.) (Family Myrtaceae) is one of the most important fruits in India. It is one of the exotic fruits prized for its very pleasant, sub acidic and aromatic pulp. Guava, known as the poor man's apple of the tropics, has a long history of traditional use, much of which is being validated by scientific research.

The light coloured wine can remind you of sparkling drinks. It helps treat hypertension and is rich in antioxidants. But those are just the perks of enjoying a glass of the delicious drink on a Christmas Eve

- Guava – 1 kg
- Sugar ( at least 1/2 kg (depending upon the sweetness of the fruit)
- Rock sugar – 250gm
- Yeast – 1 tbsp
- Boiled water – 4 litres

## Preparation

- Dissolve the sugar in water .
- Put diced guava pieces with yeast into a ceramic jar and cover it.
- Keep the lid a little loose.
- Stir the mixture for few minutes everyday.
- Strain the wine out after about 20 days, and pour it into another jar.
- Mix it well with rock sugar, and store it again for another 20 days.
- Filter the wine out after this period

Source:

<https://www.internationalscholarsjournals.com/articles/wine-production-process-from-guava-psidium-guajava-l.pdf>

<https://healthyliving.natureloc.com/guava-wine-light-coloured-fruit-wine/>



# Aloe Vera Wine



ESHANT BHARDWAJ

**Business Development Executive,  
BECC**

Aloe vera is one of the most fascinating medicinal plants and it has been studied by researchers all over the world. This plant has multiple therapeutic uses and it has been used for centuries for cosmetic and medicinal purposes. The Egyptians have been using it since 1500 B.C. to treat wounds, burns, infections and parasites. Even today, aloe vera is used successfully for the same conditions. The researchers say that aloe acts like a detoxifying and digestive agent for the body.

## Aloe Vera Wine – Recipe No. 1

This medicinal wine is a unique source of vitamin B12 and other vitamins from the B-complex. It also contains minerals and healthy fatty acids. If you own an aloe vera plant, then you should not hesitate to prepare this amazing medicinal wine at home.

There are two recipes of the wine, as you will see below.

### Ingredients -

- 5 aloe vera leaves
- 2 kg of sugar
- ½ cup of raisins
- 1 teaspoon of yeast
- The juice from an orange or lemon
- 8 cups of water

Clean and wash the aloe vera leaves and cut them in small pieces. Put them in a large glass jar and mix them with the raisins, sugar and citrus juice. Furthermore, let the water boil and after that put it over the aloe mixture. Separately, dissolve the yeast in some warm water and pour it over the aloe mixture that has already cooled. Cover the jar and let the solution soak for 21 days. Shake the container regularly. Once the 21 days have passed, you can strain the wine and put it in a sterilized bottle.

## Aloe Wine – Recipe No. 2

### Ingredients -

- 1 kg of aloe leaves
- 2.5 kg of honey
- 3.5 liters of 14-18° red wine

### Preparation

To prepare the aloe wine, you will need large aloe vera leaves, about 3 – 5 years old. If your aloe vera is in a flowerpot, then don't forget to water it 5 days before using it for the recipe. Mince the leaves, then mix them in a bowl with the honey and the red wine. Put the mixture in a large glass jar and close it tightly. Let the mixture soak for about 5 days in a cool and dark place.



## Administration

So as to benefit from the aloe vera wine properties, you can follow a 2 – 3 weeks treatment. Don't take it more than 1 month. For the first week, you must take the solution thrice a day. Take 1 teaspoon of the wine 2 hours before every meal. For the next weeks, you will increase the dose and you'll take 1 teaspoon, 3 times per day, an hour before every meal.

The aloe vera wine will increase your appetite. During this treatment, your diet must be based on fruits, vegetables (raw or steamed), soups and grilled meat.

## Indications

The aloe vera wine is beneficial for a wide array of conditions and ailments. Take it accordingly to the above mentioned indications.

### It is useful for:

- Toothaches
- Digestive problems
- Headaches
- Detoxification and boosting the immunity
- Nervous fatigue
- Inflammations
- Mastoiditis
- Eczema and other skin conditions
- Asthma
- Rheumatism
- Flu
- Sclerosis
- Alcoholism
- Allergies

Source: [https://topnaturalremedies.net/home-remedies/aloe-vera-wine-recipe-benefits/?fbclid=IwAR3nFCnBwDY6SqQpa46\\_GGM2B55ZNQWd2rrxhNEHTbCoYKhgADeM5ehGc5E](https://topnaturalremedies.net/home-remedies/aloe-vera-wine-recipe-benefits/?fbclid=IwAR3nFCnBwDY6SqQpa46_GGM2B55ZNQWd2rrxhNEHTbCoYKhgADeM5ehGc5E)





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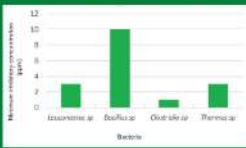
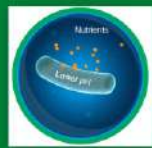


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**How It Works**  
It controls problematic Gram positive bacteria found in ethanol production by Inhibiting bacteria's glucose intake, without affecting yeast activity



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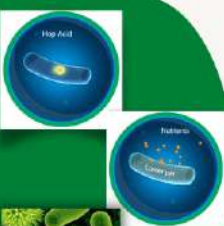


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- Keeps yeast healthy
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- Safe DDGS for animal feed
- A natural alternative to antibiotics

**How It Works**  
It controls problematic Gram positive bacteria found in ethanol production by Inhibiting bacteria's glucose intake, without affecting yeast activity





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# BREW N SPIRITS EVENT IN BANGALORE ON 6<sup>TH</sup> & 7<sup>TH</sup> JULY 2022





# AIDA TECHNICAL SEMINAR IN NEW DELHI ON 22ND-23RD JULY 2022





# WINE REPORT



KANCHAN SINGH

**Chapter Head - South Delhi, India**

**Apex Wine Club India**

**1 July 2022, Friday**

The largest wine producer of India, Sula Vineyards, has received the Gold medal at the International Wine Challenge 2022. This is the first Gold medal for an Indian winery at this stage.

This award has been won by Sula Brut Tropicale, which is a sparkling rosé, with 95 points. Besides, Sula Late Harvest Chenin Blanc has also been awarded a Bronze medal with 87 points.

The International Wine Challenge is among the most important international wine awards held each year since 1984. The International Wine Challenge received more than 18,000 wine entries in 2022.





# BrewTimes<sup>TM</sup>



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