BrewTimes™

APRIL 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 April 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.

In this month's edition our expert from starch processing Mr Rupak Kumar Chatterjee brings to you the process of high maltose corn syrup. Also our associates highlight the advantages of rice beer and brewing gluten free beer.

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.

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.

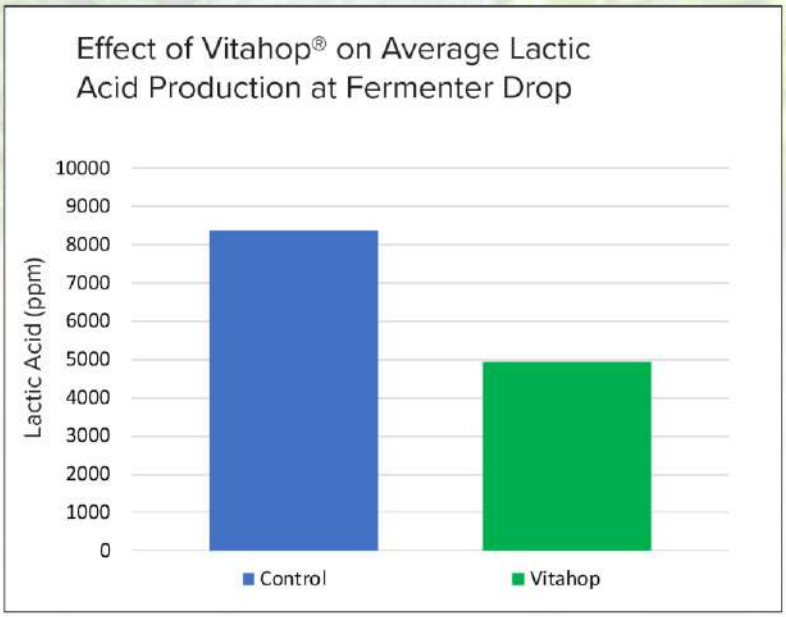
Vitahop® is used in both continuous and batch fermentations. It helps ensure healthy, vitalised yeast growth and during fermentation suppress gram positive bacteria. If bacteria are allowed to prosper, they will compete with and eventually inhibit the yeast, slowing fermentation sometimes to a complete 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®.**

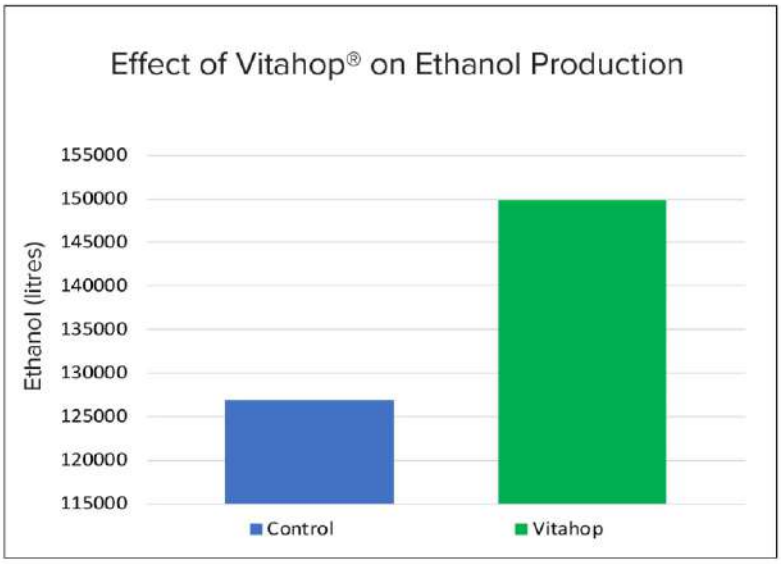
info@betatec.com | **betatec.com** | *efficient by nature®*

BetaTec® hop products

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





Unpublished data BetaTec 2015

Vitahop®

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"

HOP CREATION No. 4

CREATIVE PRODUCTS

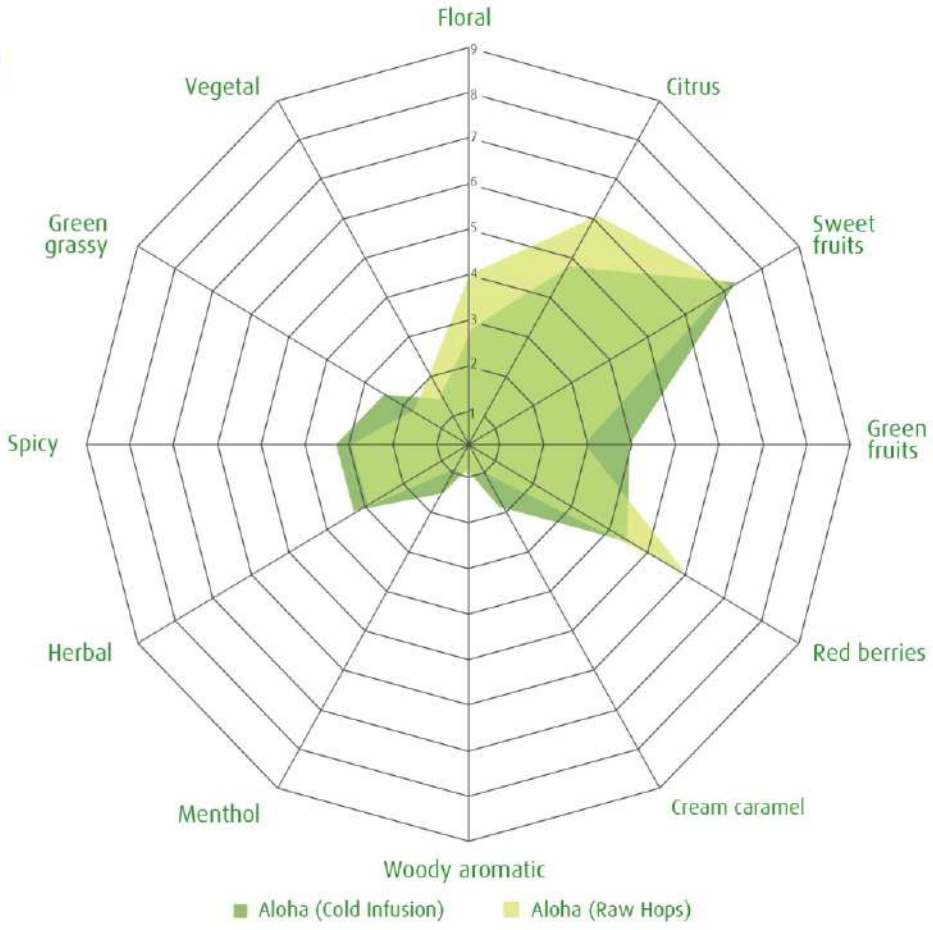
ALOHA

This unique BARTH-HAAS GROUP Hop Creation gives your beer an exotic boost with a flavour coming directly from Hawaii.

Crop 2017

α-content: 8,8 - 10,0 %

Oil content: 1,5 - 2,0 ml/100g



http://www.barthhaasgroup.com/en/varieties-and-products
brewingsolutions@johbarth.de

BARTH-HAAS GROUP

Tetrahop Gold®

Tetrahop Gold® is an aqueous alkaline solution of the potassium salts of tetrahydro-iso-α-acids. It is produced from CO_2 hops extract using a patented all aqueous process. Tetrahop Gold® enhances beer foam when used as a post-fermentation replacement for a part of the normal bittering. In the absence of normal α-acids and iso-α-acids, Tetrahop Gold® will give complete protection from the formation of light-struck flavour. Furthermore, it will act as an antimicrobial agent when added to beer. Tetrahop Gold® is classified as a modified hop extract that may be safely used in beer in accordance with the US FDA regulation 21 CFR 172.560 (b) (6).

Product Specifications:

Description:	A yellow to amber colored, aqueous solution of the potassium salts of tetrahydro-iso-α-acids.
Concentration:	Standard concentration is 9.0% ± 0.5 of tetrahydro-iso-α-acids by HPLC
pH:	8.5 – 11.0
Density:	1.017 g/mL (approximately) at 20 °C (68 °F)
Viscosity:	2 - 10 mPas at 20°C
Solubility:	Soluble in pH-adjusted de-mineralised water, and in alcohol
Iso-α-acids:	< 0.1%

Quality and Food Safety:

BarthHaas maintains quality management systems registered to the ISO 9001 standard, as well as food safety management programs based on internationally recognised (HACCP) principles. Please refer to our web site (www.barthhaas.com) for more information on our systems and programs.

Product Use:

Tetrahop Gold® is normally used after fermentation and before final filtration. Utilisation of Tetrahop Gold® in final beer can be expected between 55 - 80% depending on the time and efficiency of dosing (kettle dosing is not advisable). The point of addition should be close to a region of turbulent flow, e.g. on the suction side of a centrifugal pump. The dosing pump should be adjusted to deliver Tetrahop Gold® over approximately 70% of the total transfer time. It is advisable to make the addition prior to the final filtration step. Local high concentrations of tetrahydro-iso-α-acids should be avoided and the addition point should be well separated from that of any other additives. Tetrahop Gold® may be added at ambient temperature without prior dilution directly to beer. If dilution is necessary, the use of demineralised water and a pH adjustment to 10 – 11 with KOH is necessary. Do not use sodium bases to adjust the pH of the dilution water – caustic soda or sodium hydroxide form poorly soluble salts with most hop acids.

The amount of Tetrahop Gold® is calculated based on the product concentration and the assumed utilisation. Conducting trials at the brewery will determine the correct dosage of Tetrahop Gold® with regard to sensory bitterness and foam enhancement. Depending on the type of beer, Tetrahop Gold® may give 1.0-1.7 times the perceived bitterness of normal iso-α-acids. Tetrahop Gold® should not be left in dosing lines at low temperatures. We recommend cleaning lines and dosing pumps with warm slightly alkaline demineralised water or ethanol after use.

Usage Calculations:

The following calculations are based on the assumption of tetrahydro-iso-α-acids (THIAA) being 1.7 times as bitter as iso-α-acids (IAA). Utilisation of THIAA is expected to be up to 70 - 75% when Tetrahop Gold® is used as recommended.

$$\text{Desired Sensory Bitterness Units} = \text{BU}$$

$$\text{THIAA required in beer (mg/L)} = \frac{\text{BU}}{1.7}$$

$$\text{Dosage THIAA in mg/L } (70\%\ \textit{utilisation assumed}) = \frac{\text{BU}}{1.7} \times \frac{100}{70}$$

$$\text{Dosage in grams THIAA per hL of beer} = \frac{\text{BU}}{1.7} \times \frac{100}{70} \times \frac{100}{1000}$$

Dosage amount of Tetrahop Gold® (9% THIAA) in g/hL :

$$\frac{\text{BU}}{1.7} \times \frac{100}{70} \times \frac{100}{1000} \times \frac{100}{9}\ \text{g/hL} = \text{BU} \times 0.93\,\text{g/hL}$$

Dosage amount of Tetrahop Gold® (9% THIAA) in mL/hL :

$$\frac{\text{BU}}{1.7} \times \frac{100}{70} \times \frac{100}{1000} \times \frac{100}{9} \times \frac{1}{1.015}\ \text{mL/hL} = \frac{\text{BU} \times 0.93\,\text{g/hL}}{1.015\,\text{g/mL}} = \text{BU} \times 0.92\,\text{mL/hL}$$

*(e. g. for **5** desired sensory bitterness units 5/1.7 X 100/70 X 100/1000 X 100/9 =*

***4.7** g/hL (**4.6** mL/hL) of Tetrahop Gold® are necessary)*

Foam Enhancement:

Calculate required Tetrahop Gold® as shown above (for foam and cling enhancement we generally recommend Tetrahop Gold® not be added to the final beer at a concentration greater than 5 ppm THIAA). Reduce kettle bittering by an equivalent BU to compensate for the bitterness contribution of Tetrahop Gold®.

Light Stability:

Tetrahop Gold® will only provide protection from light-struck flavour if a complete absence of normal iso-α-acids is achieved, therefore no other sources of non-reduced iso-α-acids should exist in the wort or beer streams. Thus for light-stable beers packaged in clear or green glass bottles, all the hop bitterness must be derived from reduced hop acids such as Tetrahop Gold®, Redihop® or Hexahop® products. Iso-α-acids (from equipment or yeast) must not be present in the beer. If beta extracts are used as kettle additives, ensure that the concentration of α-acids and iso-α-acids are below 0.2%

Packaging:

Normally supplied in high-density polythene containers of 20 kg.

Storage and Best-by Recommendation:

Store Tetrahop Gold® in full, closed containers at 15 – 25 °C (59 – 77 °F). Prolonged storage at high temperature will cause deterioration. Tetrahop Gold® performs best if used within 24 months from the time of production if stored as recommended. Opened containers should be used within a few days.

Safety:

Safety Data Sheet (SDS) is available on our website www.barthhaas.com.

Analytical Methods:

The concentration of tetrahydro-iso-α-acids is measured by UV Spectrophotometry (with modified factors) or by the EBC Method 7.9 (HPLC). Details of recommended methods are available on request.

Technical Support:

We will be pleased to offer help and advice on the use of Tetrahop Gold® in brewing.

WORT & BEER CLARIFICATION

BIJAY BAHADUR

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

Introduction

It is widely acknowledged that visual appeal is a major factor in the mind of the consumer when selecting a beer. A vital part of the presentation is clarity.

The processes governing the clarification of beer are the complex mixture of constituents that is beer. By identifying critical factors which will influence clarification efficiency, monitoring and recording observations surrounding these factors, any transgression from the norm, will alert the brewer at as early a stage as possible to expect downstream problems. The necessary palliative actions may then be taken before the beer is processed or packaged, thus avoiding high levels of reprocessing, embarrassing trade complaints, or costly product recalls. sharper diacetyl concentration peaks during fermentation and thus a faster diacetyl reduction rate.

In order to identify these critical factors, it is required to explore:

- The nature of particles and the general principle governing fining action.
- The origin of particles, and how particle levels can be controlled during the brewing process.
- The use of fining agents to control particle levels, and the factors that influence their performance.
- The effects and benefits derived from the application of finings.

Source and control of particles in the brewing process

Non-microbiological particles (NMP) are produced and removed at five stages of the brewing process. Thorough understanding of how these stages affect particle formation and removal will enable the brewer to more easily control the process to achieve a consistent and optimum level of beer particles, resulting more consistent and efficient clarification process.

1. Mashing - Milling of grist materials results in the generation of plentiful fine dusty starch and husk particles. These are usually removed during lautering operations.

a) If the wort is not recirculated through the mash bed prior to run-off, these grist particles will carry through into the sweet wort.
b) During lautering, frequent, rapid, or excessively deep raking will disturb the mash bed, releasing the numerous entrapped particles.
c) If it is not known that lauter plates become damaged, warped or even incorrectly re-laid, allowing the passage of larger particles into the wort.

d) An increase in final mash temperature (favour coagulation of mash particles), though this may also increase wort viscosity, which will tend to offset the beneficial effects of coagulation on run off rates. Certain materials have been shown to coagulate mash particles, enhancing run-off rates, and reducing the number of particles carried over into the wort.

e) Over-sparging has also been shown to wash excessive levels of undesirables, such as lipids from the mash, which have a deleterious effect upon particle levels and hence final clarities or filtration performance.

2. Wort Boiling - During the wort boiling process, thermal denaturation causes coagulation of protein to form hot break.

a) Efficient coagulation is favoured by
- High wort pH,
- Presence of sufficient protein,
- Good wort boiling conditions, i.e., a minimum of 102 °C at atmospheric pressure (not recirculation at 100 °C)
- Sufficient duration (minimum one hour)
- Vigour (a good rolling boil) to maximise denaturation.

Under these conditions, hot break is formed as large flocs which are relatively easily removed in the whirlpool.

b) If coagulation is inefficient, fine flocs will be formed which may remain in suspension and be carried over into subsequent downstream stages of the brewing process.

c) As well as protein removal, it has been found that the derivation of high proportions of bitterness from hop extracts or oils, can lead to sufficiently low levels of polyphenols as to cause poor protein removal during cold break formation.

3. Wort Cooling - On cooling, wort proteins interact with polyphenols to precipitate as cold break.

a) This material consists of very fine particles that are slow to settle and consequently are likely to survive into finished beer.

b) Wort boiling and cooling (in combination) remove approx. 17 - 35% of the total protein content, depending upon the malt variety and hop product/variety used.

c) Cold break formation is temperature dependent, only forming in significant quantities below 20 - 30 °C, and increasing dramatically in quantity as the temperature is further decreased.

d) The removal of the cold break particles can be facilitated and enhanced by kettle fining.

4. Fermentation – During fermentation of wort, numerous physical changes occur, which both produce particles, and facilitate their removal.

a) Yeast reproduction starts, resulting in an increase in the number of yeast cells in the beer

b) pH is reduced by 1.0 - 1.5 pH units

c) Facilitating the interaction of protein and polyphenol moieties to form non-microbiological particles (NMP). This results in the removal of approx. 45-65% of the total soluble protein, and approx. 20-30% of the soluble anthocyanogen content of the bitter wort.

d) As the concentration of alcohol increases the viscosity and density of the wort are reduced, increasing the rate of sedimentation of any particles present. This together with the long period of time associated with fermentation, permits the removal of a certain amount cold break with the yeast cone/fermenter bottoms.

5. Beer Cooling - At the end of fermentation, as beer is chilled, yeast settles to the bottom of the fermenting vessel or cold storage tank carrying with it other particulate material as its sediments. Particle removal at this stage is augmented by isinglass and auxiliary fining agents.

It has generally been accepted as best practice, to remove particulates at as many stages of the brewing process as practical, since this gives a more efficient and consistent process.

Use of fining agents to enhance NMP separation

Clarification may be significantly enhanced at both wort cooling and post fermentation cooling by the application of finings as processing aids. All fining agents share a common set of properties which enable them to act as sedimentation agents.

- Large macromolecules
- Rigid structures (usually helical)
- Charged at an appropriate liquid pH

In a liquid medium, this type of material is at the limit of solubility, and interaction with particles in the medium will cause several molecules to become connected and, hence, will become too large to stay in solution. A floc results and this particle will be larger than the original particle, and sedimentation will result.

Factors affecting performance

Several factors have been found to affect the performance of the kettle fining:

- Dose rate
- Time of addition
- Hot wort clarity
- Wort pH
- Malt variety
- Level of cold break protein
- Degree of malt modification
- Wort gravity
- Wort polyphenol levels
- Salt concentration
- Mashing temperature

The benefits of finings technology

Still today, there are no effective alternatives to the use of isinglass in producing bright unfiltered beer. The benefits to process beer are not quite so obvious since filtration will produce bright beer from the most turbid of rough beer stocks. There are however, considerable process advantages by the use of finings in brewery conditioned or packaged beer.

Clarification products are classed as processing aids. This means that they leave no residue that has any technological function in the finished product. Optimum use of good quality fining agents can confer the following positive benefits on beer quality and the brewing process:

- Improved yeast quality
- Rapid tank turnround
- Increased brewing capacity for a given tank configuration
- Reduced requirement for capital investment
- More efficient filtration
- Longer filter-bed life
- Reduced filter powder utilization
- Improved post-filtration beer clarity
- Improved colloidal stability
- Improved foam stability
- Lower overall production costs
- More consistent, reliable and predictable process.

Conclusions

The mechanisms leading to the application of fining agents are not completely understood, by addressing the factors which influence fining performance, clarification problems may be solved as or before they occur. The principle of removing particulates at each stage of the brewing process cannot be over stressed. Considering the factors which affect each stage of the clarification system, consistent and reliable fining performance is achievable with ease.

References

1. *Hough, J.S., Briggs, D.E., Stevens, R., and Young, T.W., Malting and Brewing Science, Volume 2, Chapman and Hall, (1982)*
2. *Wort & Beer Clarification Manual – Ian L Ward*

OUR ASSOCIATES

Bioneemtec India Private Limited

RICE BEER – BREWING GLUTEN FREE!!!

DR. MENAGA MAGENDRAN

Managing Director
Bioneemtec India Private Limited,
Women's Biotech Park , Chennai , Tamilnadu

Rice is a staple food for nearly 50% of the world's population. According to the Food and Agriculture Organization (FAO) of the United Nations, global paddy rice production in 2015 was of 738.2 million tons (490.3 million tons, milled basis) .Rice does not contain gluten-like proteins, so it is particularly suitable for consumption by individuals with celiac disease . Thus, rice could be a useful raw material for the production of a gluten-free beer-like beverage. Beer is an alcoholic beverage obtained from water, barley malt, hops and fermented by yeast but other cereals can be used as raw materials or adjunct.

Recently, there is a growing interest about the use of rice malt for brewing an all-rice malt beer. Malt is the product obtained from steeping, germination and drying of cereals, generally barley. The aim of malting is to develop enzymes needed for the brewing process. Some rice varieties showed good aptitude to be malted due to their good germinative energy and protein content. Rice malt beer can be produced by obtaining a gluten-free beverage comparable to conventional beer. The beverage represents a good alternative in the diet of individuals who suffer from celiac disease.

Why Rice Beer ?

Rice is a wonderful ingredient for beer brewing in India. Here is why:

Gluten-Free beers are on the rise. Food allergies have forced restaurants and breweries to search for alternative tasty foods. Since even the glutinous rice is free from gluten, it a wonderful ingredient to use for health-conscious patrons.

European Beer relies heavily on barley. Switching to rice allows the brewer to infuse some Asian traditions, flavors, and food pairing.

Unlike Barley malt, corn and rice produce very crisp ales. Rice beer is a wonderful way to save the long time it takes to ferment a lager completely. Rice Ale can mimic the same flavors of a lager and can be produced really fast.

Barley used in a microbrewery is imported. By switching to indigenous rice, the restaurant can save costs, have a leaner supply chain, and better margins.

India is traditionally a rice-eating nation. Your patrons will be more familiar with the subtle aromas and flavors in rice than of a imported barley.

Save on Hops. Hop pellets are one of the most expensive ingredients in India. Rice Beer, unlike barley malt, has neutral flavors and aromas. This means that it is free from the malty flavors and residue. This property allows rice beer to have an overwhelming hop aroma and flavors.

The rice beer is called Sura in Sanskrit. As per our Vedic text, there are 5 major types of rice beer or rice wine.

Pasanna: Clear sypernatant liquid

Kadamari: Slightly thicker liquid which is in the second layer

Jagala: Which is more thicker and has some suspended rice particles. This gives it a milky white color

Medaka which is a semi-solid layer very similar to pakhala

Surabija is the solid portion at the bottom. It has the highest amount of yeast in it and is often used as a starter culture for the next batch. It is also referred to in some text as bakkasa, sura kalka, and kinva. Essentially it is similar to Chinese yeast balls.

Sura is useful in kasa (treating cough and cold), arshas (piles and constipation), grahani roga (digestion and gastric problems), and mutraghata (urination and prostate problems). It alleviates vata (pain, bloating, borborygmi, constipation, or diarrhea) and is useful in stanya (milk production during breastfeeding) and rakta kasaya (blood production and curing anemia or iron deficiency). It is brmhaka (boosts immunity) and Dipani (increases metabolism).

RICE BEER

RICE BEER

Health Benefits

It is a rich source of nutrients which makes it a natural antioxidant. Rice beer is known for its wide array of medicinal properties as well as health benefits. It is the perfect antidote to boost strength, remove fatigue, relieve pain, prevent gastronomical disorders, treat infections and more..

NON ALCOHOLIC BEER

AKSHAT JAIN

Business Development Manager-Craft Brewing

Non Alcoholic beer is beer with little or no alcohol content and aims to reproduce the taste of beer while eliminating (or at least reducing) the inebriating effects of standard alcoholic brews. Most low-alcohol beers are lagers, but there are some low-alcohol ales.

Positive features of non-alcoholic brews include the ability to drive after consuming several drinks, the reduction in alcohol-related illness, and less severe hangover symptoms. Low-alcohol and alcohol-free beers are usually lower in calories than equivalent full-strength beers. Some common complaints about non-alcoholic brews include a loss of flavor, addition of one step in the brewing process, sugary taste, and a shorter shelf life.

There are also legal implications. In the United States, beverages containing less than 0.5% alcohol by volume (ABV) were legally called non-alcoholic, according to the now-defunct Volstead Act. Because of its very low alcohol content, non-alcoholic beer may be legally sold to people under age 21 in many American states.In the United Kingdom, Government guidance recommends the following descriptions for "alcohol substitute" drinks including alcohol-free beer.

The use of these descriptions is voluntary.

- No alcohol or alcohol-free: not more than 0.05% ABV
- Dealcoholized: over 0.05% but less than 0.5% ABV
- Low-alcohol: not more than 1.2% ABV

Non Alcoholic Beer are beers with reduced caloric content compared to regular beer, and typically also have a lower alcoholic content, depending on the brand and where they are sold. The spelling "lite beer" is also commonly used. Non Alcoholic beers are manufactured by reducing the carbohydrate content, and secondarily by reducing the alcohol content, since both carbohydrates and alcohol contribute to the caloric content of beer.

Non Alcoholic Beer are marketed primarily to drinkers who wish to manage their calorie intake. However, these beers are sometimes criticized for being less flavorful than full-strength beers, being "watered down" (whether in perception or in fact), and thus advertising campaigns for light beers generally advertise their retention of flavor.

Diacetyl (2,3-butanedione)

ESHANT BHARDWAJ

Business Development Executive,
BECC

Perceived As:

Buttery, buttermilk, milky, oily. Lower levels can appear almost Caramel-like; at higher levels Buttery or butterscotch — think movie popcorn. It can cause a milky or slick sensation on the palate. Easier to detect in light lagers, any added complexity in a beer such as darker more robust flavors will make detection more difficult.

Approx. Flavor Threshold:

0.1 mg/l (milligram per liter)

Importance:

It is usually considered an off flavour, but is appropriate at low levels in some styles, including English Bitters, Scotch Ales, Dry Stouts, and Czech Pilsner to name a few.

Effect of Aging

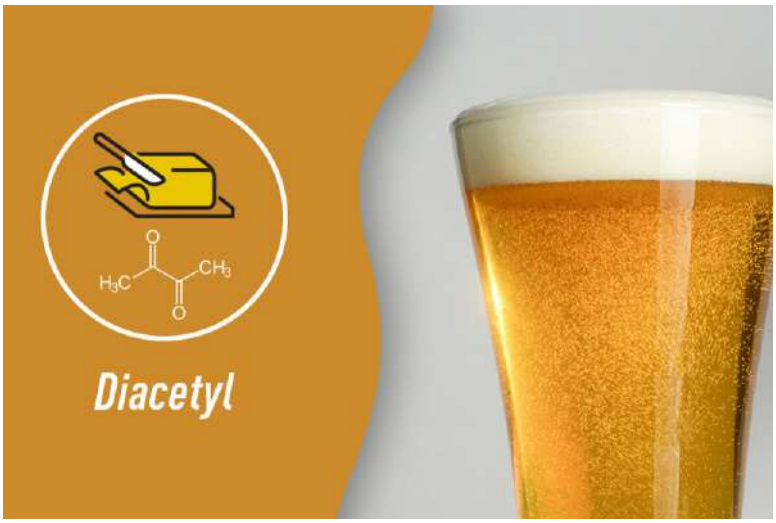
Diacetyl can become more pronounced over time in packaged beer that has the precursor of diacetyl, alpha acetolactate. As the alpha acetolactate breaks down it forms diacetyl. Temperature, pH and sugar content are the factors that affect the diacetyl formation.

Caused By:

It is produced by α-acetolatate which is a part of brewing fermentation, Diacetyl usually reabsorbed by the yeast cells during later stage of fermentation. Non-reabsorption or over production is caused by unsanitary conditions or short boiling, low temperatures during fermentation, mutated yeast, Low FAN content (especially Valine amino Acid) or racking too soon. It can also be formed by gram+ bacterial contamination.

How to Avoid/Control:

- Always boil vigorously for the appropriate amount of time to avoid contamination.
- Maintain hygienic conditions all around the brewery/ pub.
- Aerate your fermentation well when you cast your yeast. Avoid oxygenating the wort further once fermentation has begun.
- Maintain FAN content ≥150 ppm.
- Up your temperature slightly as you near the end of fermentation. This helps the yeast reabsorb diacetyl more quickly.
- Don’t be too quick to rack your young beer off the yeast. Ensure the little guys (yeast) are done doing their work before you move your beer off of them.



How To Practice:

To practice detecting diacetyl go to your local grocer and pick up some butter flavoring — preferably in a bottle that has a dropper. Follow the “Basic Practice Guidelines,” adding this in small measured doses (one drop at a time). Compare the aroma and taste to the control. Do this until you can smell and taste the butter note when compared to the control. For further practice you can do the same thing with different commercial beers of varying complexity along with beer sensing kits.

HOW TO BUY GOOD WINES IN INDIA

SIDD BANERJI

Founder, CEO,
Apex Wine Club India,
Mumbai.

Plenty of variety, plenty of brands and labels of wines both Indian and imported, are available already across the country.

Though Indian consumers are still in the their early stage to get a full understanding of the noble drink, huge exposures to western societies, thru media specially, have allowed the wine culture to get in our societies.

Wines were brought in, since ages and centuries, from west, mainly France, Spain, Portugal and Italy by the colonial powers. Mostly for higher strata of society, the royals first and then sr. officers down.

Being a conservative country, alcohols in general, wine in particular, took time to be accepted with controls and social norms.

From around Rs 300 for a 750ml bottle to Rs. 1800 you've Indian wines of very good quality. Few are exclusive and within range, Rs. 2200 to Rs. 3,500+ , more for your gen. knowledge.

Depending on your location, availability of brands can be broadly mentioned as below. Allied fruit wines and Meads included.

All India

(Fruit wines are in bracket)

Sula, Grover Zampa, Fratelli

Multi region

Good Drop, Big Banyan, (Resvera, Moonshine)

Regional

Reveilo, Oakwood, Soma, Vellonne, KRSMA, Virgin Hills, Vinland Vineyards (Desaal).

(Rhythm, Fruzzante, Cerana)

Look for the following grape varieties in Labels

There are blends too, of 2/3 grape varieties.

Red

Merlot, Cabernet Sauvignon, Shiraz, Pinot Noir, Zinfandel, Sangiovese etc.

White

Chenin Blanc, Chardonnay, Reisling, Viognier. etc.

Price range you should stick to, for starters and ones wish to learn entering into the vast wine world.

Within Rs. 1,200, India makes good wines, comparable internationally, for general drinking, easy and enjoyable hours with friends, relatives and family. Official parties, picnics and entertaining, included.

Higher priced wines, I shall suggest for a later stage.

Experienced ones Experts and Occassions. To learners, of course, door is always open to try and taste.

Wines are for enjoyment, merriment and full hearted joy with sense of absolute responsibility.

Written in both books of Christianity and Judaism, while drinking in limits is suggested, approved and accepted and is part of their rituals,*excess drinking, is very clearly and often repeated as a sin*".

Final section

India has been at the helm of affairs in IT, Agriculture, Textile, Chemicals, Minerals and now even Pharma. Leave aside achievements in Science, Technology and space.

India's achievements in art, literature and culture need not be emphasised.

Wine making, the unique process, to achieve quality noble drink, considering its need of both art and science, didn't pose as an unsurmountable issue, ever. No wonder, Indian wine producers namely, Grover, Sula have been already achieving world recognitions. Several wines have been regularly awarded and honoured at international platforms of Europe, specially, the mother place of the wine culture. The rise in quality, continuous research and trials, are regular things happening within Indian wine industry.

***Lets enjoy wines responsibly, never drink and drive, neither drink in excess*.**

(Bibliography, Grape to Glass by H R Ahuja.)

This is a syndicated article. Shall be submitted to other publishers too.

PROCESS OF HIGH MALTOSE CORN SYRUP

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Yamuna Nagar (Haryana)

Raw material from "Maize Starch Slurry"

it's the process of enzyme conversion by using alfa- amylase and beta- amylase.

Process as follows:

1. Slurry preparation by adding Enzyme n Chemicals.

2 . Jet cooking.

3. Dextrinization.

4. Saccharification: in Saccharification some parameters to be maintained strictly, like killing of alfa-amylase by dropping pH and decreasing temperature and before using of beta- amylase pH temperature to be maintained as per requirement, kill the beta- amylase by heating.

5. Filtration.

6 . Bleaching & Filtration.

7. Ion exchange (Purification).

8. Filtration.

9. Evaporation.

10. Packing.

Packing

i) In new hdpe drum.

II) In S.S. Tanker.

As per requirements.

WINE REPORT

KANCHAN SINGH

Chapter Head - South Delhi, India
Apex Wine Club India
1 March 2022, Tuesday

As the demand for organic products increases worldwide, so does the consumption of organic wine rise. Notably, the global organic wine market is expected to increase to USD 21.5 billion by 2030. The market will reportedly increase at a CAGR of 10.2 per cent from 2022 to 2030. The market is led by France and Germany in the red organic wine segment which is the most prominent. Germany is the largest market in the world for organic wine with a share of 32.3 per cent in Europe in 2021.

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