

Scenery of craft and large beer in Brazil and Europe: Historic, market and trends

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Abstract

An overview about the market, historic and trends of the production of beer in Brazil and Europe. Comparisons to the market of beer consume and producing in Europe, and the artisanal production of craft and industrial beers, trends and innovations in the area.

Keywords: beer; craft beer; Brazilian beer; European beer.

1. Review

1.1 Historic of beer in world

The process of fermentation of beer was already known by humanity from more than 10 thousand years. It is speculated that beer had been discovered accidentally, have been resulted of the fermentation non induced from any cereal. The beer produced in that époque was so different that we find today, because it was dark, strong and for long time it substitute the water, that was subjected to all the types of contamination. Although, the basis of the product, that is the malted barley, it was the same. Since that time the beverage was present in all the civilizations that succeed (Mosher, 2004).

The beverage, in the form that today is concepted, appear in the Medium Age, and its culture was disseminated, in your majority, in monastery, being this producers in medium scale, and was them the pioneer in the commercial activities of the beverage. The beer continued to be produced artisanal in the houses, and at the pass that advanced the commercial activities, surged taverns that produced and commercialized these in its own establishments. Having the point that doesn't have a form to preserve the beer for a long time, the production was regionalized (Mosher, 2004).

Most commentators suggest that batches of barley must have gotten wet through inadequate storage (rain was more plentiful thereabouts than it is now) and, as a result, started to germinate. Presumably, it was found that drying stopped this germination, and, logically, people would have discovered that this "cooking"

improved the taste of the grain. Nor would it have taken them long to realize that malt is more nutritionally advantageous than raw barley: those eating malt would have been healthier than those whose diet included barley and, for certain, would have found their meals to be tastier (Bamforth, 2002).

It is supposed that the sprouted barley (forerunner to today's malt) was made into a dough before bread making, and then batches of the dough spontaneously fermented through the action of yeasts living on the grain and in cracks and crevices in vessels. Soon the ancient brewers would have realized that the dough could be thinned with water and strained as a precursor to fermentation and that the process could be accelerated by the addition of a proportion of the previous "brew." A range of plants would have been used to impart flavors, among them the mandrake, which has a flavor much like leek. The use of hops came much, much later (Bamforth, 2002).

The Egyptians passed on their brewery techniques to the Greeks and Romans. However, in ancient Greece and Rome wine was the drink of the privileged classes; beer was consumed by the rest. Beer was not foremost among the developments bestowed by the Romans in the lands they conquered. Pliny the Elder (A.D. 23–79), a Roman author, was almost contemptuous in his view that "the whole world is addicted to drunkenness; the perverted ingenuity of man has given even to water the power of intoxicating where wine is not procurable. Western nations intoxicate themselves by means of moistened grain" (Bamforth, 2002).

1.2 Historic in Brazil

Our Portuguese colonizers wasn't consumers of beer, as so the natives. Probably the beer was introduced by dutchman colonizers, in the century XVII (1634-1654), by the company of Ocidental Indian. When the dutchman were out in 1654, the country dos not given receive these beverage for more than one century and half, resurging in the end of century XVIII (Santos, 2003).

In 1850 already have few breweries in Brazil located in São Paulo, Rio de Janeiro and at the South region. Among these exist the CervejariaBrazileira (RJ, 1836), Henrique Schoenbourg (SP, 1840), Georg Heinrich Ritter (Nova Petrópolis/RS, 1846), João Bayer (RJ, 1849), Gabriel Albrecht Schmalz (Joinville/SC, 1852), Henrique Kremer (Petrópolis/RJ, 1854), Carlos Rey (Petrópolis/RJ, 1853) (Morado, 2009).

The first industrialized breweries origin in the decade of 1870 and 1880, when Friederich Christoffel, in Porto Alegre (Happy Port), 1978, produced more than a million of bottles. In 1880 have found the two enterprises that dominated the national market, Company Brahma Brewery of Rio de Janeiro and the Company Antarctica Paulista (Santos, 2003).

The first industrialized breweries origin in the country on the decade of 1870. The Imperial Fábrica de Cerveja Nacional (Imperial Fabric of National Beer) de Henrique Leiden e Cia (RJ, 1848), the Voegelin andBager (RJ, 1848), the Carlos Rey and Cia., and the Henrique Kremer, that come the Imperial Fábrica de Cerveja Nacional (Imperial Fabricof National Beer) in 1876 and, in 1898, passed to called Bohemia Brewery. In 1888 were funded the two biggest enterprises that should dominate the national market, Company Brewery Brahma in Rio de Janeiro and the Company Antarctica Paulista (Morado, 2009).

In 1966 and 1967, surged the Cerpa – CervejariaParaense, and the Skol, respectively. Four years later, was lanced the first can of Brazilian beer, made of leaf of flandres, denominad of Skol Pilsen. Since the decade of 80 many microbreweries were opened, growing the stiles of beer. N 1980 surges the Kaiser Brewery, in Divinópolis (MG) and in 1989 the Primo Schincariol passed to produce beer in the interior of São Paulo. The fusion between the companies Antarctica Paulista and the company Brahma brewery that occur in 1999, surges the AmBev – Company of Beverages of Americas. The creation of AmBev and your fusion with de Belgian Interbrew, with the name of InBev, since 2004, turns to be the biggest of the wolrd(Morado, 2009), that results with the junction with the American Anheuser-Busch in 2008, consolidanting in the biggest brewery of the wolrd, AB-InBev.

When it was colony, the Brazilian ports were closed to foreign mercadories, so, what entered before the opening of the ports in 1808 (with the come of real family for the Brazil) was contrabanded principally by Recife, Rio de Janeiro and Salvador. In 1850 had few notices of Brazilian breweries, have been found in São Paulo, Rio de Janeiro and some deutsch colonies in Rio Grande do Sul for example Henrique Leiden. Villas Boas e Cia, Gabel, Logus, Versoso, Stampa, Rosa, Leal, etc, all those artesanals, and of small production (200 to 300 thousand bottles per year). Since 1860 until the first World war, have been a biggest increase of production of beer, have been interrupted in these time because the non import of barley and hop of deutsch and austriac origin (Santos, 2003).

1.3 Definition and characteristics of beer

According to the Decret 6871 of 4 of July of 2009, beverage is all industrialized product, destined to human ingestion, in liquid state, without finality medicamentous or therapeutic. According to these same Decret, article 36, beer is defined as the beverage obtained by alcoholic fermentation of the brewer most, prevent of malt of barley and potable water, by action of the yeast, with addiction of hop, and these can be substituted by your respective extracts, as well part of the malt of barley can be substituted by malted cereals or not, and by carbohydrates of vegetal origin transformed or not. Beer is the alcoholic beverage most consumed in Brazil. The country is the fourth biggest producer and consumer of beer, in terms of volume.

It is estimated that has actually more than 20 thousand types of beer in the world. Small modifications in process of fabrication, as different times and temperature of boiling, fermentation and maturation, and the use of others ingredients, besides the basic four – water, hop, barley and malt – are responsible for a variety so large of different types of beer. By the Brazilian legislation, besides the traditional denominations, the beer can be too of the type Export and Lager (similar characteristics to Pilsen) (Sindicerv, s.d.).

Beer can be classified according five items: 1- fermentation, as high or low fermentation; 2- primitive extract, as light between 5 and 10,5%, common, between 10,5 and 12%; extra, between 12 and 14%, and strong, superior to 14%. The third classification is related to color, as clear, those with less than 20 units EBC (European Brewery Convention), and dark, with 20 or more EBC units. The fourth classification its about the alcoholic content, considered without alcohol that has less than 0,5% in volum in alcohol, and alcoholic that has same or more than 0,5% in volumn of alcohol. And the fifth classification, according the level of extract (final), is low until 2%, medium between 2 and 7%, extra among 12 and 14%, and high with more than 7% (Mapa, 2009).

According to the fermentation, the beer that yeast flown in the superficies, is called high fermentation, and the temperature of the process is between 20 and 25°C, while the beer that yeast deposits in the fermenter, is called low fermentation (also known as lager beer), is fermented in temperature between 9 and 14°C, and the majority of the beer is produced with this form. Although it has been discovered in the last two hundred years, because of the advent of refrigeration by Linde (Sindicerv, s.d).

The most known types of lager are Pilsener, Munchener, Vienna, Dortmund, Einbeck, Bock, Export and Munich – the majority of them a tribute to the cities from come the formulas (Sindicerv, s.d.). The beer type Pilsener born in Pils, in Tchecoslovaque, in 1842, and it's the most known and consumed in world. It has a delicate taste, light and clear and with low alcohol content (between 3 and 5%), and it is also the preferred of the Brazilian. In Brazil, its consume- that is more adequate to our weather – reach to 98% of the total consume, and the resting is distributed for the types bock, light, malzbier and stout (Sindicerv, s.d).

According the National Syndicate of the Beer Industry (2010), the consume of the beverage, in 2007, presented raise in relation to 2006, have been reached the baseline of 10,34 billions of liters for year (Sindicerv, s.d). The per capita consume of beer keep stable since 2005, but, compared to the world pardons, already is relatively shy (ROSA; Cosenza; Leão, 2006; Carvalho et al., 2008; Sindicerv, s.d).

The brewery sector in Brazil had been observed, in the last years, the becoming of new stiles of the beverage that scape from the traditional type Pilsen. To adequate to the technological advances and promote equality of conditions and competitiveness in front of the imported products the Ministry of Agriculture, Pecuary and Supply (Mapa) is actualizing the parameters of quality actually present (Agricultura, 2013).

Representants elaborated, with the collaboration of the productive sector, a propose of normative instruction. The text, that seems the utilizations of ingredients as fruits, erbs, vegetables and flowers at the composition of the beverage, will be disponibile for public consult in few years (Agricultura, 2013).

1.4 Characteristics of the microbreweries and large breweries

For Abrabe (s.d), the microbreweries are characterized to be micro industries that in almost totality has familiar origin, with small installations that allow the production of special beer or chopp in few amounts, with the utilization of special ingredients and with traditional recipes, that utilizes more quantity of malt per hectoliter produced when compared to the large breweries.

With the popularization of the beverage, the biggest disponibile of ingredients and the offer of modern machines and small, almost totally automatized, since the decade of 1980, the microbreweries begin to gain force in the United States. Many of the was originated from activities of home brewing, the north-american microbreweries of this time play to survive in front of the conditions of market extremely difficult until the end of the decade of 1970, the brewery industry was centered in only 44 enterprises, and the perspective was that are only 5 enterprises should act in the market in the next years (Brewers Association, s.d).

The decades of 1990 and 2000 marked the consolidation of the position of the microbreweries in the north-american Market. These empreendiments established a high level of quality, consistence and innovation in their beer, contributing to a creation to a brewer culture more diversificated(Brewers Association, s.d).

In Brazil, it has been verified that the originof the microbreweries is related to attributes of demand – elevation of the acquisitive power and the constant choice of the consumers by differentiated products – and of offer – strategic choice in front of the competitive ambient, characterized by the elevated level of concentration of the market (Passos, 2012)

Suzuki (2010) affirms that exist near of a hundred microbreweries in Brazil in 2009, that correspond to 0,15% of the market. The majority of them, according to the author, was funded in the last fifteen years and are concentrated in the regions south and southeast of the country. For Morado (2009), the expansion of the microbreweries is a phenomenon justified by the possibility to empreend a lucrative business that needs differentiation. According to the author:

As a natural reaction to the domain of the biggest enterprises in a sector, the empreendedoristiniative appear to offer alternatives to the Market. The phenomenon of the microbreweries, that occurred in many countries before come to Brazil, finally appear here in the second half of the decade of 1980 (MORADO, 2009, p. 318).

Even with the large breweries investing in the market of special beer, the production already is concentrated in the small microbreweries. Dates non consolidatedindice that the participation of the special beer in brewery market reach approximadately 5,5% in 2008, what represent a montant of R\$2 billions. Although, in other latin-american nations, the gourmet beer reach to occupy a slice of 10% of the total market, while in Occidental Europe the participation is almost 50%.

Suzuki (2010) present some characteristics that can be found at the Brazilian microbreweries:

- Produce annually until 5 millions of liters;
- Produce beer with malt content over than 80%
- Make products with special ingredients
- Take traditional recipes, as the german *Reinheitsgebot*;
- The distribution is regional and;
- In the majority, are familiar business

For Morado (2009), what characterizes a microbrewery is the production of beer that carry attributes connected to the region of origin, tradition and differentiate quality.

Brazil's beer consumption per capita is also far lower than that in Germany, yet it has one huge Brewer in the world top 10, AMBEV, formed by the recent merger of two already enormous entities, Brahma and Antarctica (Bamforth, 2002).

According to Morado (2009), it had been 67 microbreweries in Brazil in the year of 2009, and in 2013 it was noticed 232 microbreweries. Although, according the Brewers of Europe (s.d) there are estimated 5500 breweries, microbreweries and large breweries in Europe resulting in approximately 40000 different beer brands in the market.

According Salgado (2015) in 2012 had 55 non artisanal breweries, versus 2401 artisanal, in 2013 these numbers were 54 and 2863, and in 2014 were 46 and 3418, respectively, for non artisanal and artisanal breweries, showing the tendence of the large breweries to buy the small microbreweries, that was sohwn when the AmBeVbought the "Mineira" brand Wals.

The microbreweries are largely dependent of the disponibility of yeast, malt, hop and other ingredients, and the investments in installations and equipments are limited.

According to Rosa (2008), had in the country approximately 60 microbreweries that produces beer so much different than those that the consumers drink to tradition or preference.

The beer of microbrewery is characterized by elaboration of a beer more Strong, with flavor more pronounced. One of the factors that explain this difference between the beer elaborated by microbreweries and large breweries is the utilization of specific varieties of hop, that justify the accentuated growth of this segment (Keukeleire, 2000). In the United States, it knows as microbrewery all the enterprise that produce until 15 thousand barrels per year, that one barrel is equivalent to 3,78 liters (Neves, 1996).

According to dates of the Integrated System of Products and Establishments (Sipe/Mapa), are registered 232 breweries and 1110 types of beer in Brazil, that represents less than 1% of the market, concentrated mainly in south and southeast regions (Abrabe, s.d). . According to information's of the Bart-Haas Group, the country occupy the third position in the world ranking of beer production, with above 13,7 billions of liters produced in the year of 2012 and a consume per capita of approximately 65 liters per year (Agricultura, 2013). Besides, according Abrabe (s.d), Brazil produced 13.464.240.288 liters of beer in 2013. Although, in relation to consumption, Brazilian consumers 64,4L/year, index that reaches 151,2L/year in Czech Republic. Estimates indicates that this segment of artisanal beer presents tendency of growing and can reach 2% of the market of beer in ten years, motivated by consumers of sensorial satisfaction.

1.5 Researches with differentiate raw materials for beer production

Recent studies shown that the market of craft beer has grown, as in the case that universities and microbreweries made new formulas and used new ingredients as raw materials or adjuncts in beer. According Agencia USP de notícias (2016) researches developed at beverages plant of the School of Engineering of Lorena (EEL) of USP used adjuncts non-conventional as sugarcane molasses, milk permeated, pupunha, quinoa, pinhão (*Araucaria angustifolia*), black rice, among others (Agência USP de Notícias, 2016).

Although, until now it doesn't exist commercial production of these beverages, explained João Batista de Almeida e Silva, professor of the Department of Biotechnology of EEL-USP. He affirms that the adjuncts contribute to diminish the costs of production of beer, and add new sensorial characteristics to the beverage (Agência USP de Notícias, 2016).

Study made by Hendges (2014) showed good acceptance of consumers by a beer produced with quinoa, with low content of alcohol. Carvalho (2006) studied the use of banana as adjunct of beer, and as conclusion the samples of beer with banana was so accepted as the commercial samples used. These demonstrates that it is sensorial available to produce them. Andrade (2007) studied the production of beer with black rice as adjunct, and the sensorial analysis through the triangular test reveals that the chopp produced was different in flavor than the market sample. The opportunity to use this co-product of the beneficiating of black rice as adjunct of malt has a potential in market, because besides to be a technologic innovation can stimulate the harvest of these variety, directing this discard to industrialization, minimizing the loss for producer.

Other purpose was the addition of raw-materials as aromatizers to the beer, as in the case used coffee by Duarte (2015), author of the master study "Evaluation of use of toasted coffee as aromatizer in the beer production" (Avaliação do emprego do café torrado como aromatizante na produção de cervejas). In the study, it was made the beer with 15, 25, 35 and 45% of coffee and the most appreciated in sensorial analysis was 45%. All the sensorial analysis was made with lay people.

In studies realized by Passaghe (2014), he used as raw material millet, amaranth, buckwheat and quinoa, to produce a beer that coeliac can consume, as a gluten free beer.

Other adjunct found was honey, used by Brunelli (2013), that shows in her studies good acceptance in sensorial analysis that was used hedonic scale. The beer was approved by the sensorial panel, obtaining the media of 6,37 for common beer, 6,10 for extra beer, and 6,32 for the strong beer. In relation to the different proportions of honey, it was the note 6,02 for the beer with no honey, 6,29 for the beer with 20% of honey, and 6,48 for that with 40% of honey. Those values between 6 and 7 indicate that the panel classifies the beer between "lightly like" and "regularly like". When compared statistically, the presence of honey in the formulation of beer don't interfere in the acceptance of the consumers for all the sensorial attributes evaluated, although, the strong beer (15°Brix) obtaining higher acceptance of the consumers.

1.6 Marketing of beer

According to Rosa, Cosenza and Leão (2006), the beer has a Market fidelity and crescent, that constitute one of the main products that compose the sector of beverages. This market is affected by seasonality, with sell more significatives during summer and regionals holidays. In the Brazilian case, the volumes turn more robust in the fourth trimester of the year, because of the station of the year and the festivities of the period.

A cerveja do tipo Pilsen é a mais conhecida e consumida no mundo e também é a preferida dos Brasileiros, por possuir um sabor delicado e leve, ser clara e de baixo teor alcoólico (entre 3 e 5%). No Brasil, o consumo de cerveja Pilsen chega a 98% do total, ficando o restante para as cervejas do tipo Bock, Light, Malzbier e Stout (Sindicerv, s.d).

Its previst that the special beers (imported ouartisanals) in Brazil have a tax of growing higher, if compared to the previst taxes for the market to the traditional Pilsen. In 2007, special beer grown 12%, while beer in general only 6,7%. Some breweries already promote plans of marketing related to sophistication of the consume of beer. Basically, the focus is the promotion of the beer culture and the presentation of different stiles, with the aim to attract new niche of market (Beerlife, 2010).

Other type of beer that has been contrast in the national Market is that produced in microbreweries, accompanied by a international tendency. The beer of microbrewery is characterized for been a product more fullbodied and of flavor more pronounced, that has been consumed principally by people more

exigent in terms of sensorial quality, that reach a differentiate product, independently of the price. A microbrewer generally adopt as technologic alternative a scale of production until 50.000litres/year, thus, a month medium production of 4.160 liters (Neves, 1996, cited in Araújo; Silva, Minin, 2003).

For Rosa, Cosenza and Leão (2006), the Brazilian enterprises begin to come to the Market of more acquisitive power, with the distribution of superpremium, light and special beer. These classification are specific of Brazilian breweries and are based only in criteries of market, that shouldn't be confused with the classification internationally adopted, because a large part of these beers are of the type Pilsen, as the others already produced in the country. What motivates the large Brazilian companies to ingress in these type of market is the possibility to increase the profit and to conquest more fidelity to the commercialized brands. Although, already represents a small percentage of the market, evidentiates yet the existence of new opportunities for the increase of consume per capita.

According to Gonçalves (2008), the Sindicerv indicated a growth in these segment, based in the growth of the rentof the Brazilian consumer and its disposition to pay more for a product of differentiated quality. In the point of sell, some special beers come to have prices that vary to five to three hundred reais.

Even with the biggest breweries investing in the market of special beers, the production already is concentrated in the small microbreweries. Dates not consolidated, due to the mismatch of information as the qualification, indicate that the participation of the special beer in the beer market reached approximately 5,5% in 2008, that represents a montant of 2 billions of reais. These results is, yet, so inferior than other countries. In other Latin-Americannations, the gourmet beer reach to occupy a slice of 10% of total market, while in Occidental Europe the participation is almost 50% (Gonçalves, 2009b).

According to Gonçalves (2008a), some acquisitions, between 2007 and 2009, had as objective reforce the strategic vision of large breweries, to atend to all the segments of the Market of beer, and the ampliacionof participation at the segmentof beverages with high aggregated value: (i) in 2007, the Schincariol acquired the Baden baden (SP), the Devassa (RJ) and the Nobel (PE); the Dado Bier had her line of beer bottled and canned in the fabrics of AmBev, i\z\sddfffdn Rio Grande do Sul; Kaiser, actually Femsa, had the brands Heineken, Gold, Sol Premium and Bavaria Premium and passed to import the Mexican Dos Esquis; and (ii) in 2008, the Schincariol Group acquired the Eisenbahn brewery (SC).

The segmentof beer have been researched for diverse authors, and some knowledges of the habits of consume had been analyzed. Urdan and Urdan (2001) verified that the consumers don't know how to distinguish with security the brands of beer from a blind test and don't know how to define what criteries influence in your preference of brand.

The modernization of the sector already come to USA, Canada and Italy, possibiliting the opening of new breweries, microbreweries and artisanal breweries, that produce besides the Pilsen, stiles like Pale Ales, wheat beer, IPA,s and much other that already make partof the menu in various parts of the world (Agricultura, 2013)

The artisanal beer are about 1% of the volume of beer produced in Brazil; in the USA, is already 7,8% of the volume, and 14,3% of the billing of the brewery sector (Samor, 2015).

The volume of beer sold in Brazil by AmBev come to present growth in the last trimester of 2014, as divulged the giant of the beverage sector in its trimestral relatory. The liquid recipe of the enterprise grown 10,6% in 2014 and, for 2015, the company works with numbers a little lower, principally by the fact that this year we won't have Football World Cup (EngarrafadorModerno, 2015a).

Talking about Market, the enterprise divulgated that the volume of premium beer sold in Brazil raise almost 20% in 2014 and passed to represent about 8% of the volume of beer sold by AmBev. Recently, the enterprise acquired the "mineira" fabricant of artisanal beer Walls and, by the numbers divulged, other acquisitions can show near here (EngarrafadorModerno2015a) showing that is compete in the game, and, if

referee what happens in the American market, this can't be the unique acquisition. The new brand will be indexed to the Bohemia Brewery (EngarrafadorModerno2015b).

Other interesting factor informed by the directors of the enterprise is about the Brahma 0,0%. Lanced in 2013, without a lot of pretension, the beer landed off in the consumers taste, principally by the quality of the product (EngarrafadorModerno2015a).

Its one of the few beer of the market in the category without alcohol that has a taste more similar to the traditional beer. Some products without alcohol disponible in national market are, literally, difficult to drink. Brahma 0,0% it's the lider brand in the market, and already represents 1% of the total volume of beer sold by the enterprise in the country. It believe that the sell of beer without alcohol will increase in Brazil in response to questions about the "Dry Law" and changing of comportment of the consumers that find products more healthy and find in the niche of beer without alcohol some attributes that satisfy their necessities (EngarrafadorModerno2015a).

The market of artisanal beer for a long time made part of the plans of the large Brazilian breweries. Already like Schincariol, the Brazil Kirin acquired almost of one time the Baden Baden, the Devassa and the Eisenbahn, all yet in the portfolio of the business and developing beer with higher quality like they made in the époque of solo career (EngarrafadorModerno2015b).

The AmBev act in the area of special ber with the brand Bohemia and now will proveit the competence of Wals and the portfolio with 17 brands to increase your penetration in these segment. It was previst the landing (lançamento), in march, of the Saison d'Alliance, beer with speciaries of ginger, salvia and hortelã (peppermint) (EngarrafadorModerno2015b).

Invest in the market of artisanal beer recquireousadia and courage and, besides of all, sabedoria to valorize the experience acquired in the past and perceive the nuances of the reality of the present, for trace a way for a long time. New breweries surge all the time searching forms to increase your sell (Parra, 2015).

The beer, in Brazil, create the culture of the Pilsen. We were accustomed to drink only this type of beer and learning too that beer is a refreshing beverage to be consumed in parties. For a period these arguments of business sorted effect, the consumers in your majority with low acquisitive power or by products with low price and the enterprises reduces the costs to offer a portfolio small of products. The gain it was compensated in volume. This continues to happen, but the options increase, both for that offered by large business of the products disponible by microbreweries and fabricants of artisanal beer (Parra, 2015).

The Brazilian already have the habit to consume beer, what the microbreweries and artisanal breweries pretend now is that those consumers learn to drink a differentiate beer. For this, new beer begin to make part of menu of restaurants and pubs, besides the supermarkets and other points of sell in the country (Parra, 2015).

The increase of the options its only possible with the growing of the productive capacity of the fabrics and of the appearance of new producers. The both things are happening. Microbreweries installed long years in the market felt that come the time to expand the productive capacity, as well the inaugured enterprises in few years come the demand increase and begin to invest to gain participation in the market (Parra, 2015)

The growing of the industry varies between 1 and 4% depending of each country. Among the principal producers of beer producers in world are Brazil, Mexico, Colombia, Venezuela, Peru and Chile (Cavalcante, 2012).

The consume of beer in Latin America oscillate between 12 and 80 liters per capita per year, according to numbers of the association. The brewer industry, explained the geral-secretary, costume to dispose so much to the Produto Interno Bruto (PIB) ("gross national product") and vice-versa. "Countries with good economic situation allow to the population can orientate investments in products like our". In Latin America this sector

transformed in an important economic activity, represent between 1 and 7 perceptual points of the PIB of the countries of the region (Cavalcante, 2012).

According to FAO (2016), Belgium, Brazil, Germany, and USA had a decrease of beer from barley imported of 13.95%, 21.39%, 13.18% and 0.62%, in contrast to Netherlands, that had an increase of 10.49%. For exportation, Belgium and Germany had a decrease of 5.81% and 4.02%, while Brazil, Netherlands and USA had an increase of 10.62%, 0.959% and 11.3%, respectively.

Os processos aeróbios e anaeróbios de geração de energia podem parecer toscos e prosaicos; no entanto, representam a base de algumas das maiores descobertas da raça humana: os alimentos e bebidas fermentados.

Para a produção de pães e a maioria das bebidas alcoólicas, a levedura *Saccharomyces cerevisiae* é utilizada, produzindo etanol e CO₂. Encontradas em vários ambientes ricos em açúcar – como sucos de frutas e néctares –, as leveduras podem realizar os dois tipos opostos de metabolismo quimiorganoatrófico: a fermentação e a respiração. Na presença de oxigênio, as leveduras crescem eficientemente em substratos que contêm açúcar, duplicando-se e gerando CO₂ (este último oriundo do ciclo do ácido cítrico). Por outro lado, na ausência de oxigênio, as leveduras passam a realizar um metabolismo anaeróbio, que resulta em uma pequena taxa de reprodução, mas com produção de quantidades significativas de álcool e CO₂.

2. Conclusion

The Market of craft beer in Brazil is in ascension, although it needs new perspectives to reach the patamar of the European microbreweries and large breweries, that represents 50% of the consume, compared with the slice of 2% of craft beer consumed in Brazil.

The use of differentiated adjuncts in beer is recently and it was used besides the low costs, to aggregate different sensorial characteristics. Because of the law in Germany of the pure malt bier, most of the breweries in Europe doesn't use adjuncts of malt, although, it clearly seems that the market is beginning to accept these new products.

3. References

Agência USP de Notícias.(2015). Pesquisas buscam novos adjuntos de malte para a cerveja. Available: <http://www.usp.br/agen/?p=218371>. (April 13, 2016).

Agricultura. (2013). Mais de mil tipos de cervejas estão registradas no Brasil. Available [:http://www.Agricultura.gov.br/comunicacao/noticias/2013/12/mais-de-mil-tipos-de-cervejas-estao-registradas-no-Brazil](http://www.Agricultura.gov.br/comunicacao/noticias/2013/12/mais-de-mil-tipos-de-cervejas-estao-registradas-no-Brazil). (July 20, 2015).

Andrade, C.M. (2007). Obtenção de chope usando arroz preto (*Oryza sativa*) como adjunto de malte. Dissertação (Mestrado). Universidade de São Paulo Escola de Engenharia de Lorena. P. 78. Lorena.

Araújo, F.B.; Silva, P.H.A.; Minim, V.P.R. (2003). Perfil sensorial e composição físico-química de cervejas. *Ciência e Tecnologia de Alimentos*, Campinas-SP, v.23, n. 2, p.121-128.

Bamforth, C. W. (2002). *Standards of Brewing: a practical approach to consistency and excellence*, Boulder, Colorado, Brewers' Publications, 209 pp.

- Batista, Ra.; Almeida e Silva, J.B.(2015). Evaluation of the proportion malt:“pinhão”(Araucaria angustifolia): Effect on acceptance in sensory analysis. European International Journal of Science and Technology, v. 4, number 3, pp.150-156.
- Beerlife(2010). Available: http://www.beerlife.com.br/portal/default.asp?id_texto=28.(July 5, 2015)
- Brasil. Ministério da Agricultura, Pecuária e Abastecimento. Decreto 6871 de 4 de julho de 2009. Available: http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2009/Decreto/D6871.htm. (March 15, 2016).
- Brewers Association. (2011). Available:<https://www.brewersassociation.org/>.(April 15, 2016).
- Brunelli, L.T. (2012).Produção de cerveja com mel: características físico-químicas, energética e sensorial. Dissertação (mestrado). Universidade Estadual Paulista “Júlio Mesquita Filho”. P. 103. Botucatu
- Carvalho, G.B.M. (2009).Obtenção de cerveja usando banana como adjunto e aromatizante. Tese (Doutorado). Universidade de São Paulo Escola de Engenharia de Lorena. P. 163. Lorena.
- Cavalcante, L.A.(2012). Logística de distribuição de cervejas no Brasil – pontualidade nas entregas. Monografia. Universidade Candido Mendes Pós Graduação “Latu sensu” AVM Faculdade Integrada. Especialista em Logística Empresarial.
- Duarte, L.(2015)Avaliação do emprego do café torrado como aromatizante na produção de cervejas. Dissertação (Mestrado). Universidade de São Paulo Escola de Engenharia de Loren. P. 115.
- Exame.com (2010). Setor de microcervejarias cresce no Brazil. Available: <http://exame.abril.com.br/pme/noticias/setor-microcervejarias-cresce-Brazil-573642>. (June 28, 2015).
- Engarrafador Moderno. 2015a. AmBev vai aumentar investimentos em cervejas especiais. Available:<http://engarrafadormoderno.com.br/materia-principal/ambev-vai-aumentar-investimentos-em-cervejas-especiais>. (July 22, 2015)
- Engarrafador Moderno. 2015b. AmBev compra fabricante de cervejas artesanais. Available: <http://engarrafadormoderno.com.br/home-brewers/ambev-compra-fabricante-de-cervejas-artesanais>. (July 22, 2015).
- Forbes, 2015. The 30 Best Craft Beers Available In Brazil. Available:<http://www.forbes.com/sites/andersonantunes/2015/02/18/the-30-best-craft-beers-available-in-brazil/#36fdc7662d46>. (April 15, 2016)
- Gonçalves, D. (2009). Indústria de insumos trabalha pesado para garantir diversidade de sucos. Revista . Engarrafador Moderno, São Paulo-SP, n.185, p.20-24. Available: http://www.engarrafadormoderno.com.br/edições/Edi%E7%E3o_185.pdf. (March, 20, 2016).

- Hendges, D. (2014). Produção de cervejas com teor reduzido de etanol, contendo quinoamalteada como adjunto. Tese (Doutorado em Biotecnologia Industrial). Universidade de São Paulo Escola de Engenharia de Loren. P. 140. Lorena.
- Keukeleire, D. (2000) Fundamentals of beer and hop chemistry. Química Nova, v.23, n.1, p.108-112.
- Morado (2009). Larousse da cerveja. Larousse do Brazil. 1a Ed.
- Mosher, R.(2004). Radical brewing. Colorado: Brewers Publication.
- Neves, A. L. R. A. (1996). Viabilidade técnico-econômica e análise de risco da implantação de microcervejarias no Brasil. Viçosa. 79p. Dissertação - (Mestre em Ciência e Tecnologia de Alimentos), Universidade Federal de Viçosa – UFV.
- Paiva, G.M. (2011)Estudo do processamento e mercado de cervejas especiais no Brasil. Trabalho de Conclusão de Curso. Centro Educacional da Fundação Salvador Arena. Faculdade de Tecnologia Termomecânica, São Bernardo do Campo. 90p.
- Parra, C.D. (2015). Expansão das artesanais: Aumento da capacidade industrial, produção colaborativa e outras estratégias alavancam crescimento do mercado de artesanais no Brasil. Engarrafador Moderno. Available: <http://engarrafadormoderno.com.br/mercado/expansao-das-artesanais>. (April 12, 2016).
- Passaghe, P. (2014) The colloidal stability of craft beers obtained with gluten-free adjuncts: an assessment of aspects related to technology, composition and analysis. PhD. Food Science. University of Udine. 173p.
- Passos, D.A.C. (2012) . Monografia. Identificação da competitividade da indústria cervejeira:Uma aplicação de caso da SaintBier-Forquilha-SC. Universidade Federal de Santa Catarina – UFSC Centro Sócio Econômico Departamento de Ciências Econômicas. 79p.
- Salgado, R. (2015). Microcervejarias artesanais são a nova aposta da AB InBev para dominar o mercado. Available: <http://epocanegocios.globo.com/Informacao/Acao/noticia/2015/07/microcervejarias-artesanais-sao-nova-aposta-da-ab-inbev-para-dominar-o-mercado.html>. (April 15, 2016).
- Samor, G. Estratégia Ambev para cervejas artesanais: junte-se a elas.(2015). Available :<http://veja.abril.com.br/blog/mercados/alimentos-e-bebidas/estrategia-ambev-para-cervejas-artesanais-junte-se-a-elas/>. (July 22, 2015).
- Santos, S.P. (2003). Os Primórdios da Cerveja no Brasil. 2ª.Ed. Cotia: Ateliê Editorial. 56p.
- Sindicerv. Tipos de cerveja .s.d. Available:<http://www.sindicerv.com.br/tipo-cerveja.php>. (July 22, 2015).

Soares, N. (2011). Tempo de mudança. Engarrafador Moderno, São Caetano do Sul, n. 205, p. 14-22,.Available: http://www.engarrafadormoderno.com.br/edicoesEdicao_205.pdf. (April 11, 2016).

Suzuki, Fábio. (2010). Butiques de cerveja roubam consumidores das grandes. BrasilEconômico, . São Paulo, p.36.

The Brewers of Europe. Choice and diversity. Available: <<http://www.brewersofeurope.org/site/beer/index.php>>. (April 15, 2016).

Tschope, E.C. (2001). Microcervejarias e Cervejarias: A História, a Arte e a Tecnologia. 1a Ed. 223p.