Acta Scientific Nutritional Health (ASNH)

Perspective

Special Issue 1- 2019

Beer and Culture

Obembe Oluwaseun*

OSA Food and Solution, Ibadan, Oyo State, Nigeria

***Corresponding Author:** Obembe Oluwaseun, OSA Food and Solution, Ibadan, Oyo State, Nigeria.

Received: August 17, 2019

Published: September 05, 2019

Introduction

Beer and culture

A wide variety of foods and beverages are produced through alcoholic fermentation. These include wine and beer. Wine and beer are ancient products, but mead was probably the first fermented beverage. It is made by diluting honey with water or fruit juice and allowing yeast to convert sugars (glucose and fructose) to alcohol and carbon dioxide. Since honey can be found naturally and could easily be diluted with water and since wild yeasts abound, it is likely that this combination occurred and the resulting intoxicant beverage became popular. Mead is notorious for giving memorable hangovers when used in excess, so the benefits and consequences of fermentation were probably discovered at the same time.

Material and Methods

Material

Four key ingredients

- Water
- Barley
- Yeast
- Hops

Functions of each ingredient used in making beer

Water

- Brew water.
- Clear.
- No heavy metals present.

Barley

- Influence sugar.
- Influence flavor.
- Influence foam.
- Influence mouth smell.

Hops

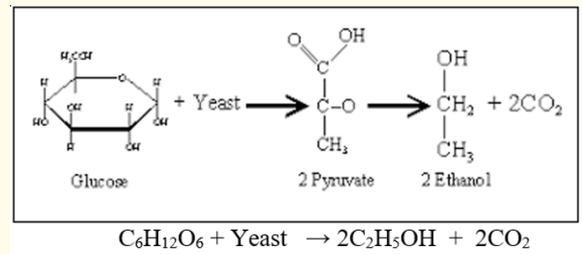
- Add bitterness.
- Add flavor.
- Add aroma.
- Serves as a natural preservative.

Yeast

- Converts fermented sugar to alcohol and Co_2.

Alcoholic fermentation

Is applied in production of Palm Wine, Beer, Ale, Stout, Wines, Burukutu and other alcoholic beverages. In this type of fermentation, sugars are converted into ethyl alcohol and carbon dioxide according to the simplified equation below:



$C_6H_{12}O_6$ + Yeast $\rightarrow 2C_2H_5OH + 2CO_2$

Glucose Ethyl alcoholic carbon dioxide

Figure 1

Many different types of yeast can be used to bring about this type of fermentation, but most commonly, species of the genus saccharomyces such as *S. cerevisiae* and *S. carlsbergensis* are employed. Ethyl alcohol and to some extent carbon dioxide acts as the natural preservative agent in such fermented products.

Beer, Ale and Stout are produced from barley by a series of processes in which the complex carbohydrates of barley are first broken down into simpler sugars are fermented. In a separate process, the barley is first allowed to germinate under controlled conditions to produce malt which contain active enzymes most of which are developed during the germination process. These enzymes help in the breakdown of starch.

Method

The making of beer

A wide variety of foods and beverages are produced through alcoholic fermentation. These include wine and beer. Wine and beer are ancient products, but mead was probably the first fermented beverage. It is made by diluting honey with water or fruit juice and allowing yeast to convert sugars (glucose and fructose) to alcohol and carbon dioxide. Since honey can be found naturally and could easily be diluted with water and since wild yeasts abound, it is likely that this combination occurred and the resulting intoxicant beverage became popular. Mead is notorious for giving memorable hangovers when used in excess, so the benefits and consequences of fermentation were probably discovered at the same time.

Figure 2

Beer is probably the oldest drink and the basic ingredients are malted cereals, traditionally barley, hops, water and yeasts. The first step in brewing is malting. The production of malt involves storage of the harvested grains so as to build up germinating properties. This takes about 30-60 days in the store. Steeping follows immediately after storage. The purpose is to introduce water into the cereal kernels. Insufficient steeping affects malt quality and clarity. Over-steeping affects germination and encourages spoilage.

The steeped grains are then germinated. Germination is the physiological process in which the plumule and the rootlet of the seeds are elaborated to form a new plant. During germination, levels of moisture, air, Co_2 and temperature are controlled. Germination is for 3-5 days (Grossman, 1964). After the required level of germination, the germinated malt is kilned to reduce the moisture content and stop further growth. Kilning is like drying of the malt and is carefully controlled so that it is not burnt.

Beer is obtained when the malt is subjected to the brewing process. Ground malt is dispersed in water to bring into solution small particles through enzyme activity. The pH of the beer is controlled and mineral salts are added sometimes. An important function is to bring about the change in protein of the malt by proteolytic enzymes present. If the mashing is not well done, there wouldn't be enough substrates for the yeast of action.

Filtration is done to the wort and water-insoluble materials are separated from spent grains, through a bed of spent grains. The separation takes place in the wort tube or filter press. Wort boiling is done in wort copper vessel and this is done to sterilize and stabilize the wort as well as extract the constituents from hops. It also destroys any enzymes that have been carried over. Another change is the darkening of the colour, which is caused by caramelization of sugar.

Wort is cooled before fermentation and this is done rapidly to prevent microbial degradation. The wort is then transferred to the fermentation vessel. Lager beer is produced with bottom fermenting yeast. The yeast *Saccharomyces carlsbergensis*, converts the fermenting substrates to alcohol and Carbon dioxide. Fermentation is considered to be completed when the desired degree of conversion called attenuation has taken place. When fermentation is complete, beer is cooled to about 12^0C. This is then followed by filtration, bowling pasteurization and packaging.

Various kinds of traditional alcoholic beverages are produced in Nigeria and other West African countries from many types of agricultural sources. The production of these beverages like any other traditional fermented foods in Africa is by the age-long method of chance inoculation and uncontrolled fermentation process (Sanni et al 1999). Traditional alcoholic beverages include Pito, Burukutu, Sekete and Agadagidi. The first three are produced by washing the cereal grains, which are the raw materials, steeping in water for about 2-3 days followed by malting which is carried out on a moistened banana leaves or jute bags for 3-4 days with intermittent watering. A portion of the previous brew is usually added to initiate fermentation. The alcohol content of the product may vary from 2-3%.

Agadagidi is produced from the fermentation of plantain; plantain fruits are usually harvested at a green, pre-climacteric stage of maturity. Once harvested, the fruit has a short shelf life as it ripens very quickly. Spontaneous fermentation of over-ripe plantains is carried out in some parts of Nigeria to produce a beverage called Agadagidi. The fermentation processes has been described by Abiose and Adedeji (1994) who observed that mixed flora of yeasts and bacteria were involved in the fermentation [1-5].

Nutritional facts about beer

The reason why hops is boiled with the wort

- To inactive enzymes.
- To extract soluble substances from hops.
- To precipitate coagulable proteins.

Composition

- Protein and carbohydrate 2-7.5%.
- Alcohol 2-7.5%.
- Water 90-97%

Health benefit of beer to human

- Anti-oxidant.
- Flavor in hops (inhibit cancer enzymes).
- Beer has no cholesterol.
- Beer flushes the system.
- Beer contain vitamin B (riboflavin B2, B6, folate).
- Low in sodium increases the potassium and has the possibilities of controlling high blood pressure.
- Minerals (silicon) – lower the risk of osteoporosis.

Figure 3

Quotes

- "Alcohol gives the desire (libido) but takes away the performance". - William Shakespeare
- "Alcohol does not have any nutritional value but a source of energy". – Obembe Oluwaseun

NOTE: Beer is widely consumed all over the world after water and tea.

Questions

1. What is the history of beer inclined with culture?
2. What is the role of a beer parlour in the public?
3. Should woman drink beer?
4. Should women shop beer in their refrigerator?
5. What is good about beer?

Bibliography

1. https://en.wikipedia.org/wiki/beer
2. https://beer.fandon.com/wiki/beer
3. https://diliquor.com/products/beer
4. https://www.goodreads.com/quotes/61519-who-ever-drinks-beer-he-is-quick-to-sleep-whoever-sleep
5. https://willienelson.com/story/willie-quotes