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Processing Methods, Physical Properties and Proximate Analysis of Fermented Beverage of Honey Wine Booka in Gujii, Ethiopia

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Abstract

Consuming of alcoholic beverage from different sources or product have several injurious possessions like conceptual and intellectually, work suffering, loss of control, wrong conclusion in humans and undependable behaviours. Different areas alcoholic beverage of Ethiopia was chronicled regarding methanol and ethanol content. The Oromos traditional drinking are coffee (Bunaa) or Buna qalaa and Booka in Gujii Communities. Booka is more than a drink to the Gujii people, but a symbol of their culture and important aspects of their lives, such as their cattle, land and bees. The objective of this research was to identify the indigenous processing methods, physical characteristic and nutritional composition of Booka honey wine in Gujii communities. To complete the research, questionnaire were distributed to gather indigenous knowledge of preparation and samples of Booka were collected from Bule Hora and Dugda Dawwa. Regarding processing method the bladder were carefully removed, cleaned and filled with honey and water. Then, the supernatant ready to drink after 2-3 days. PH and proximate analysis were completed using pH meter and AOAC official methods. Booka drink pH content ranges between 2.903 to 3.123. The moisture, ash, Fat, protein and total carbohydrate were recorded as 82.18, 0.82, 1.43, 7.01 and 8.56% respectively. Except the moisture content all the proximate analyses were significantly higher than the previously documented alcoholic beverage of Ethiopia. Booka honey wine is the first animal origin fermented alcoholic beverage to be introduced scientifically. Further analysis will be required to enhance the Medical importance and toxicity of these traditional drinking.

Keywords: Booka honey wine; Indigenous knowledge; Bladder; Gujii; Alcoholic fermented beverage

Introduction

The firmness of a food product shelf life and its consequent depends on the several factors including the quality of ingredients, content of yield, its structure, condition for processing that can be used in any manufacturing industries, packaging and storage, management and distribution. All these factors need to be understood first and then controlled to meet the optimal or target quality and shelf life. The food industry has a great responsibility firstly to make sure that the products it manufactures are safe at every occasion over its entire shelf life and, additionally, that the products are of a sensory quality acceptable to and expected by the consumer. Consuming of alcoholic beverage from different sources or product have several injurious possessions like conceptual and intellectually, work suffering, loss of control, wrong conclusion in humans and undependable behaviours [1-3]. Different areas alcoholic beverage of Ethiopian including methanol and ethanol content were chronicled in different areas of Ethiopian communities was chronicled regarding methanol and ethanol content particularly by [4] for Tella, Areke and Tej. Alcoholic drink had also been linked to cancer of the large bowel in both sexes and female breast. According to the study for average consumption alcohol about one to two drinks per day had associated to increase half percent of breast cancer [5].

The main foods of Oromoo are animal product like meat (Foon), milk (Aanan), baaduu (cheese), Butter (dhadhaa), and cereals that eaten as marqaa/laaqaa (Porridge). The Oromos traditional drinking are coffee (Bunaa) or Buna qalaa in Oromoo Gujii and Borena commonly, daadhii (honey wine), farsoo (Beer) and special daadhii (Honey wine) called Booka in Gujii Communities. But in western Oromia Ancootee (a food made from the roots of certain plants) is a special food. This form of honey wine ready by the Gujii communities of Ethiopia call their product booka, after the name of the cattle bladder in which the drink is prepared. The Gujii people, as common among all Oromo sub-groups, were organized under the Gada system [6]. Honey wine production in this style takes place in the districts of Bule Hora, Malkaa Sooddaa, Tuulaa Surroo, Finchawa (Dudda Dawwa), in the state of Oromia, in southern central Ethiopia.

In Ethiopia, fermented beverages are commonly consumed at religious ceremonies like Easter, X-mass, Meskel and in Oromia especially non-religious ceremonies such as Irreechaa, Fuudhaa heerumaa (Marriage ceremony), and iqub as well as at social gatherings. Though fermented beverages are not major foods, they serve as source of energy in many countries [7-10]. In Gujii, Booka had been consumed for ceremonies like Eebbaa (Blessing), Gadaa power transition (Baallii dabarsaa), Sorrows (Gaddaa), Conflict resolution (Araara) and Gondooroo. Gondooroo implies declaring or concluding something or an event not happened again. The Gondooroo tradition is performed not only as a mechanism of purifying the blasphemy from the guilty but,

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also as a method of conflict resolution in Gujii. Traditionally, the drink can also be passed over the heads of individuals from older people/ Gadaa leader to bless and protect them. It is a drink that is offered to visitors in the home, especially the elderly, as a sign of respect. For instance, people in Gujii had a ceremony and traditional request of marriage called *Kadhaa* in the morning. In that case the request had provided from men family to women during morning called Barii Barraaqa in Gujii. After final decision and agreement of two families after three round ceremony of eating and drinking will opened and the fermented product obtained is Booka honey wine commonly. Starting from that period the member of two family start drinking this beverage early in the morning, but, based on evidence of community people continue drinking up to two Qorii (Figure 1) totally per day and in additionally some of them may add a few cups (Kookkii) of Booka. Booka is more than a drink to the Gujii people, but a symbol of their culture and important aspects of their lives, such as their cattle, land and bees.

Booka is a drink that is considered a form of local culture, and is often prepared particularly for elderly people, who drink it from the traditional wooden bowl called the *qorii* and are said to be able to predict the future from the booka they drink. Indigenous fermented alcoholic beverages from different parts of the world have been identified and documented. Some of these beverages include Ethiopian *tella*, *tej*, *areki*, *borde* and *shamita* [11-13] also the similar data were documented in Turkish as Boza [14] and in Zambia as Munkoyo [15], as described above Tella, Tej and areke are consumed in Northern part of Ethiopia whereas borde, Cheqa and Shamita are mainly consumed in middle and south of Ethiopia as described by [16,17]. It well documented that excess intake of alcohol affects the central nervous system, gastrointestinal tract, both cardiovascular and endocrine systems, liver lipid metabolism and fetal development [18] and [19]. Furthermore, alcohol intoxication is the direct harm to the body due to acute consumption of high amount of alcohol beyond liver's metabolism due to their low-level of alcohol dehydrogenase enzyme [20]. Therefore, it is essential to find and determine alcoholic content and physico-chemical properties of local alcoholic drinking.

Objective

Therefore, the objective this study was to find and determine alcoholic properties and physico-chemical properties of local alcoholic drinking, Booka.

Figure 1: Abba Gadaa Blessing ceremony and younger drunker by Qorii.

Methodology

Physical property and preparation assessment of Booka

To collect the information of Booka two study sites Bule Hora and Dugda Dawa were selected purposively due to the number of consumers were increased from time to time. Bule Hora is the capital city of west Gujii and located at 467 km from capital city of Ethiopia whereas Dugda Dawwa/Fincawa town also in West Gujii located at 30 km from south of Bule Hora town. A questionnaire was distributed for a total 10 (ten) elder people whose had indigenous knowledge on Booka preparation and whose had consumed Booka for at least three consecutive years. As well as 30 participants was selected to provide information on characteristics of Booka those available during data collection at market place.

In addition to ten ender people two mothers whose prepared Booka for at least two years were added as study participants to explain the preparation and taste of local drinking the samples of Booka honey wine were collected from two different districts based on the weather condition among west Gujii Zone (Dega and Woyna dega i.e., Bule Hora and Dugda Dawwa). The study site had selected for the purpose of Booka honey wine were commonly and largely consumed. But there is an area where Booka was largely consumed more than two called Gallabba and Malkaa Sooddaa but, due to time constraint and finance problem were does not included.

Sample collection

10 kg of each dried and stored sample were collected from each district to observe variability in location. According to traditional conservancy methods the pure honey called "Damma Ebicha" was purchased from Fincawa town market, Dugda Dawwa by conventionally skilled elders. During assortment of sample as engaged from elder peoples of Gujii the honey to water in 1:0.5 (Cup:Litre) (Figure 2A and 2B) were added to the sample to keep sustainability of Booka life. Then the sample were transported to Addis Ababa laboratory centre for proximate analysis to determine the physical and nutritional properties of Booka (Figure 2C).

Data collection for preparation methods

To collect indigenous processing methods of Booka the researcher has investigated three-day period for observation and record of data in each district. On the first day the sample of Booka were observed carefully and according to the instruction from the elders the pure honey who's purchased from local market were added then left for the coming day. On the second day the observation regarding the colour change, fermentation and progress were recorded within 6 hours interval. On the last day the supernatant of Booka was carefully removed and after two to three-time dilutions it was made ready for the consumers.

Preparation of sample for laboratory analysis

Sample preparation was conducted based on the indigenous preparation method (Figures 3 and 4) and above information obtained. All the required ingredient Booka sample, pure honey and water were prepared accordingly. After the material has cleaned and dried by sun drying methods about one-third (1/3) of water has filled in the trunk of 10L before adding Booka sample to trunk. About 4.8 KG of Booka sample were extracted and added to the water containing trunk. The trunk was closed for the first one to two day to collect any observation. After supernatant and sediment was separated two samples was ready for further analysis in which the processes were supported by [21,22].

Figure 2: Original Booka extracted from bladder **(A)**, Pure honey added to Booka **(B)** and mixture of Booka and honey for enhancement **(C)**.

Figure 3: Prepared sample for analysis from two areas Bule Hora and Dugda Dawwa.

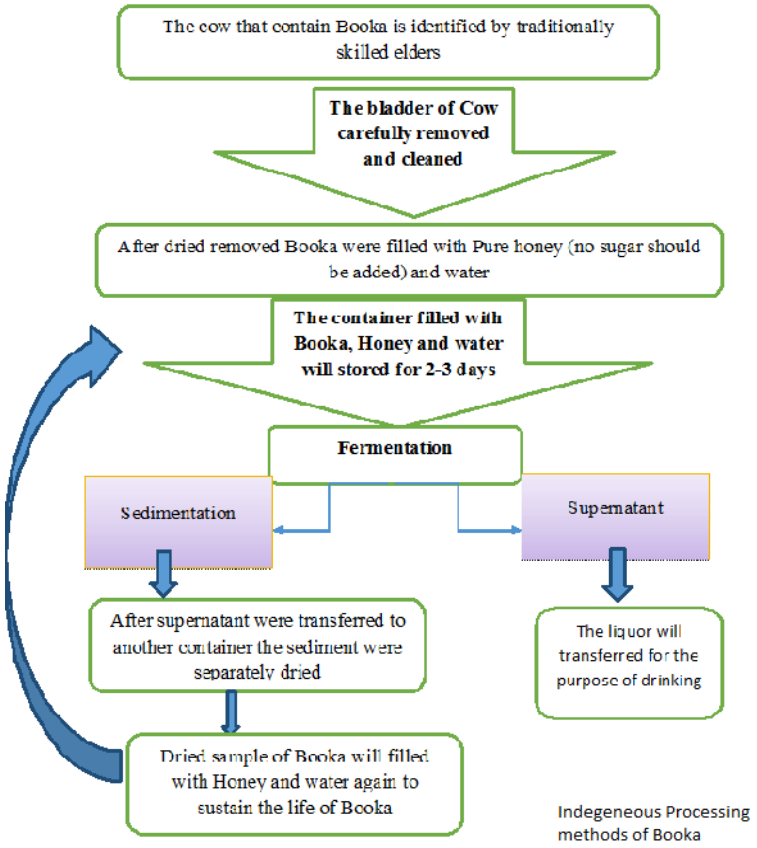

Figure 4: Flow chart that outlining indigenous processing methods of Booka.

Determination of nutritional profile

The approximate, expected moisture content of a food can affect the choice of the method of measurement. It can also guide the analyst in determining the practical level of accuracy required when measuring moisture content, relative to other food constituents. The AOAC International methods for cheese (Method 926.08) were selected purposively. Moisture content of Booka sample was determined using oven drying methods [23] which is a method approved by AOAC. The sample was heated under specified conditions (65°C) and the loss of weight is used to calculate the moisture content of the sample because of the raw material had high content of water before.

The moisture content (%) were calculated from the following formula

$$\text{moisture}(\%) = \frac{(\text{wt of wet sample} + \text{Crucible}) - (\text{wt of dry sample} + \text{Crucible})}{(wt\ of\ wet\ sample + Crucible) - (Wt\ of\ Crucible)}$$

The ash content of the sample was determined by using approved procedure by AOAC using Muffle furnace at 550°C [23]. Fat Content of the Booka sample was extracted using continuous solvent extraction methods available [23]. Protein and nitrogen content was analysed from Kjeldhal methods. Analysis of protein and nitrogen is complicated due to some food components possess similar physico-chemical properties and selection of appropriate methods. In following digestion, neutralization and distillation the total nitrogen was determined and due to the fact that most of protein contains 16% of nitrogen protein were computed from nitrogen content. Control/blank parallel analysis were conducted to reduce the consumption of reagents [23]. Again, total carbohydrate containing amount of fiber were determined using "carbohydrate by difference" by reducing the amount of nutrients obtained from assuming 100 grams of total nutrients [23].

Determination of alcoholic content of Booka Honey wine

An alcoholmeter (hydrometer) was used to determine the alcoholic content (ethanol) level of honey wine (Booka). An instrument was standardized by using the alcohol determination of samples of known alcohol content. Hydrometers had special scale marked by volume percent of an alcohol in water. It has been worked by determining the specific gravity of liquids. It is usually made of glass and consists of a cylindrical stem and a bulb weighted with mercury or shot to make it float upright. The liquid is poured into a tall jar, and the hydrometer is gently lowered into the liquid until it floats freely. This had conducted by taking a sample of National alcohol product found in the laboratory of National Alcohol and Liquor Factory [24,25].

Results and Discussion

Socio-demographic characteristics of Booka Honey wine research participants

As presented in Table 1. The mean ± SD of research participants were 22 ± 5.03. All of the study participants had at least attended primary school and about one-third of the research participants are Orthodox Christian followers. Almost more than half (56.7%) of the participates are students whose attending formal education. And the remaining 1/3rd percent (33.34%) was employed in different organizations.

From the Table 2 below among the study participants about 96.67% (n=29) were consumed Booka Honey wine and none of them has taken Araki, Shemeta, Borde or Other local fermented beverage. More than half of them (53.33%) was consumed Booka in the morning while other 90% (n=27) consumed Booka both in the morning and afternoon till mid-night. Regarding the amount of Booka Consumed regularly in Kookki/Qorii; 43.3% of study participants consumed more than 3 Kookkii but 57% of the study group has responded mostly they consumed more than one Qorii during family program or group discussion. Again, based on the data collected none of them had information about advantages/disadvantages of taking Booka since many years but, all the study participants were consumed Booka for at least 2 years. Immediate response like gastric and especially when the sediment consumed during consumption was reported by 56% of the consumers and the detail of processing and microbial changes during fermentation of borde were described by Abegaz [11,12].

Characteristics		Mean ± SD	(N=30)	(%)
Education status	Primary School		14	46.7
	Secondary School		12	40
	College/University		4	13.33
	Christian		10	33.3
	Muslim		6	20
	Orthodox		11	36.7
	Other (Wakefata)		3	10
Age of Participant		22 ± 5.03		
	15-25		19	63.3
	26-35		4	13.33
	35+		7	23.33
Occupation	Students		17	56.67
	Farmer		3	10
	Government Employer		8	26.67
	NGO Empl		2	6.67

Table 1: Selected socio-demographic characteristics of the research participants.

Characteristics of Consumption in Booka		Frequency	%
Consumption of Booka currently	Yes	29	96.7
	No	1	3.33
Type of Drink consumed locally	Keneto	28	93.33
	Softdring	30	100
	Booka	29	96.67
	Beer	19	63.33
	Araki, Shemeta, Borde, Katkala	0	0
Consumption period	In the morning	16	53.33
	At mid-day	7	23.3
	Afternoon	18	60
	Both morning and Afternoon	27	90
Amount of Booka Consumed regularly in Kookki	4 Kookki	11	36.7
	3 Kookki	13	43.33
	2 Kookki	6	20
In Qorii (Group/family) Information about advantage/ disadvantage of Booka	Qorii	17	56.7
	Advantage		
	Disadvantage		
Year they had consumed	2 years	12	40
	3 years	11	36.7
	> 4 years	7	23.3
Immediate response reported during consumption	Yes	17	56.7
	No	13	43.3

Table 2: Reported type of local drinking consumed regularly.

Physical characteristics and consumption pattern of Booka

Booka is produced in both rural and urban communities of Guji and Borena for household consumption, income generation and also for special occasions especially when a group of young people (Qeerdho; who have good contact so that they invite one another to drink Booka together). As honey is classified in to different classes based on physical, chemical and nutritional properties also the quality of honey determines the variability in different wines because of different classification [26]. Food eaten by man and animals also supplied nutrients for growth and development. This also causes the nutritional, physical and chemical constituents of this traditional drinking. Booka is a liquid slightly yellowish which had very interested odour with solubility of it in water actively. Booka honey wine is sweet without addition of sugar. It is also the product which commonly known in South Oromiyaa of Gujii ethinics. It requires only the addition of pure Honey (Dammaa ebichaa) to be enhanced. Beyond this physical parameter there is also colour differences in different sources of Booka and that of highly preferred it is also believed that Bookaa makes the bone stronger.

According to the respondents, the sensory acceptance of Booka vary depends on the preparation skill or market beneficiaries. Beside that of similarities in the raw material used for Booka preparation Booka which is often produced for sale and at special occasions should have a bitter taste, refreshing aroma, consistent texture, a very small residue *Hambulla* and a fairly longer shelf-life. In addition, it shouldn't contain sugar and additional/foreign materials such as Gesho, Atala or other during preparation.

Indigenous Methods for Preparation of Booka Honey Wine [27]

Indigenous fermented foods are relatively cheap to prepare and are therefore can be easily affordable in meeting the demands of low-income consumers. The greatest drawback in the development of fermented food products is that many products are produced under primitive conditions and as such can result in low yield and poor quality, including short shelf-life [28]. In addition, the processes of most traditional fermented beverages are often laborious and time-consuming and also difficult to standardize as they rely upon rudimentary equipment and sources of energy which do not readily lend themselves to modernization of the process or development of local capabilities [29-31].

The production and preparation methods are not difficult for Booka; it can only be made with certain types of cow bladders (Figure 3). The Gujii people (mostly older people) know which cows to select for this process, because they are those that cannot survive long periods without water. The cause of the existence of the Booka in bladder of a cow is unknown exactly. The drink, the bladder of a cow is carefully removed and cleaned, and then filled with a honey and water solution (Figure 2A). Then it will be enhanced *(Ukkaananii kaasan)* with Honey from special type of tree called Ebicha and then it is named as Honey of Ebicha *(Damma Ebichaa)* (Figure 2B) because the fertility of this Booka will be more fastened in this type of honey has used (Figure 2C). Again, the other reason might be due to absence of bitterness of honey from Ebichaa. In case if this Booka (a small stone like sand) has explored the life of this Booka (not harmful bacteria) will stopped. The container is sealed and stored for one to two days (Figure 5A), during which time it undergoes fermentation. Traditionally the people can identify the production of Booka by its sound (Figure 5B). After fermentation completed two layers (Sedimentation and supernatant) were formed (Figure 5B). The upper layer (supernatant) will then ready to drink (Figure 6).

Flow chart to show the traditional processing methods of Booka

As mentioned Booka is prepared for many occasions, and people will often come together in a group to drink it. It is also sold locally. The dried Booka (bladder) was stored for a long time and reused. To do this the remaining sedimentation was mixed with liquid honey (Nadhii dammaa), covered by clothes which serve as filtrate and put on the roof of house (Figure 4). Today, however, many are substituting sugar for honey to lower production costs, and the authentic version of the drink is being lost. Additionally, with urbanization and changing food habits, many are selecting to drink beer, sodas and other imported drinks over traditional local beverages. Surprisingly when a sugar getting contact with dried Booka the life of Booka will not be continued. Sometimes when the life of the Booka discontinued with an unknown case immediately when the leaf of Ebicha has added the life of Booka might renewed and continued (Gaggaddee kaati). Booka is more than a drink to the Gujii people, but a symbol of their culture and important aspects of their lives, such as their cattle, land and bees.

Determination of pH in Booka honey wine

The pH meters were calibrated using buffer solution and standard solution three times and correction factors were obtained. The pH of Booka honey wine was determined by inserting the electrode of digital pH meter into beaker containing sample Booka. From the Table 3 below the mean pH of Bule Hora and Dugda Dawwa origin Booka were registered as 3.123 and 2.903 respectively. As one can understand that the Booka wine is more acidic in comparison to another type of traditional drinking commonly consumed locally. This might have a role in quality and shelf life of Booka.

The alcoholic content of Booka honey wine

As reported in Table 4 the overall mean alcoholic content of the Booka samples was 1.53% (v/v) with a range of 1.04 and 2.02. The values were very low in comparison to the other traditional beverage as shown in the recent studies of determination of ethanol level in Beverage by Gizaw Debebe [25]. For further investigation the mean separation was not determined due to lack of enough literature on alcoholic content of local beverage.

Nutritional composition of Booka honey wine

From the report of Table 5 the moisture content was recorded as 82.33% for Bule Hora and 82.025% for Dugda Dawwa sample. Regarding nutrient profile of Booka, it is very low in moisture content in comparison to other types of fermented products in different areas of Ethiopia. In the comparison to the MC of different local drinking; of that of Booka Honey wine was significantly different ($p<0.001$) from the previously documented drinking. This might also have an advantage on microbial spoilage and quality of this fermented beverage.

From Tables 6 and 7 except the result of Fat content of Tejj and Katikala in which data were not available the nitrogen, protein and fat content of Booka is greatly high in comparison to other local drinking as presented in Table 3 above. With the same result the mean difference was significant statistically ($p<0.05$). But there is no statistical difference with fat content of Cheka ($p=0.05$) (Belay Binitu et al.). From the Table 3 in the same manner the crude protein content of Booka was larger than the registered type of local traditional drinking and the mean also statistically different from all protein content of Tela, Tejj, Shamita, Katikala, Cheka and Bordaa as presented in Table 7 below with $p<0.05$.

Figure 5: Booka and honey mixture after two days **(A)** and Booka ready for drinking and its residue **(B)**.

Figure 6: Supernatant ready for drinking purpose after filtered.

Home based alcoholic beverage in different area of Ethiopia	Energy (Cal)	Moisture (%)	Nitrogen (%)	Protein (%)	Fat (%)	CHO[f] (%)	Ash (%)	Rema
Tella, Known as Tella	7.9	98.3	0.1	0.3	0.3	1.0	0.1	*
Mead (Tejj)[a]	-[g]	97.2	-	-	-	-	-	*
Mead (Birz local alcoholic beverage), Daadhii	43.60	88.90	0.04	0.3	0.00	10.6	0.2	*
Shamita (Gurage Origin)	76.0	80.00	0.50	2.9	0.3	16.0	1.10	*
Katikala	-	-	-	-	-	-	-	*
Kerkede, Hibiscus sabdarifa L. Known as Kerkede in Assosa/Mao [b]	11.0	95.90	0.01	0.03	0.02	3.80	0.30	**
Maize, Zea mays L: Abara at Gambella or Agnuak	26.00	93.80	0.12	0.80	0.60	4.5	0.30	**
Cheqa (Konso) [c]	49.00	98.00	0.31	1.90	0.90	8.90	0.30	**
Borda wesa around Metekel/Shinasha and Borde around South Ethiopia [d]	40.00	89.80	0.20	1.30	0.60	7.80	0.50	**
Booka, known in Gujii[e]	-	82.18	1.12	7.01	1.43	8.56	0.82	

*From the sample collected from Arsi, Shewa, Wello, Sidamo Kiflehager (currently, SNNP and south Oromiyaa), Gonder, Harar and Tigray between 1968-1997 [29]
** Data's are almost from all part of Ethiopia [31]
[a]Honey, water and leaves of hop shrub.
[b] Non-alcoholic beverage and from +sugar + water:
[c] Sorghum + maize: alcoholic beverage
[d] Sorghum + Millet: alcoholic beverage
[e] an alcoholic traditional drinking from Booka+Honey+Water
[f]Carbohydrate content including fiber
[g]– indicates that data are not analysed

Table 3: Comparison nutritive value of Booka with another fermented beverage of Ethiopia.

According to the report of Table 8 regarding the total Carbohydrate content of Booka; lower content of were recorded for Booka but the differences were not statistically different from carbohydrate content of Cheqa (in derashe) and Bordaa (in Metekel) p=0.547 and p=0.207 respectively. Alongside that of mean variation there is a significant difference of mean in comparison to the other locally consumed traditional drinking p=0.00. Whereas for ash content of Booka the ash content was significantly different for other type of traditional drinking documented in different areas of Ethiopia. Adjacent to that, it is known that the ash content of a food product might indicate that the presence of minerals in food sample. This might support the generation of hypothesis to be developed further because of supported by indigenous knowledge of Gujii elders that believed the consumption of Booka will increase the strength of Bone (Table 9).

Nutritional Composition	Bule Hora origin (%)				Dugda Dawwa origin (%)				Remark, Average
	Trial 1	Trial 2	Trial 3	**Mean**	Trial 1	Trial 2	Trial 3	**Mean**	Mean±SD
Moisture content	81.4	82.90	82.69	**82.33**	81.88	83.04	81.155	**82.025**	82.18±0.81
pH	3.06	3.08	3.25	**3.123**	3.01	3.03	2.669	**2.903**	3.01±0.19
Ash Content	0.92	0.80	0.821	**0.847**	0.79	0.82	0.73	**0.780**	0.82±0.06
Crude Fat content	1.703	1.79	2.09	**1.861**	1.00	1.50	1.51	**1.003**	1.60±0.36
Crude protein content	7.53	7.80	7.383	**7.571**	6.57	6.92	5.878	**6.456**	7.01±0.7
Carbohydrate content	7.48	7.34	7.346	**7.391**	9.74	9.60	9.86	**9.736**	8.56±1.29
Alcoholic content	1.86	0.66	0.60	**1.04**	1.99	2.01	2.06	**2.02**	1.53±0.7

Table 4: Nutritional profile of Booka in two districts.

Characteristics of Booka	Test Value = 80% to 98.3%				95% Confidence Interval of the Difference	
	Test Value	t	df	p-value	Lower	Upper
MC of Tella	98.3	-48.929	5	.000	-16.97	-15.27
MC of Tejj	97.2	-45.591	5	.000	-15.87	-14.17
MC of Daadhi	88.9	-20.400	5	.000	-7.57	-5.87
MC of Shamita	80	6.611	5	.001	1.33	3.03
MC of Katikala						
MC of Kerkede	95.9	-41.645	5	.000	-14.57	-12.87
MC of Abara	93.8	-35.272	5	.000	-12.47	-10.77
MC of Cheqa	98	-48.019	5	.000	-16.67	-14.97
MC of Bordee	89.8	-23.132	5	.000	-8.47	-6.77

Table 5: One-sample test of moisture content (MC) with different local drink.

Characteristics of Booka	Test Value = 0.00% to 0.9%				95% Confidence Interval of the Difference	
	Test Value	T	df	p-value	Lower	Upper
Fat Content of Tella	0.3	8.724	5	.000	.9161	1.6815
Fat Content of Tejj	-					
Fat Content of Daadhi	0.00	10.740	5	.000	1.2161	1.9815
Fat Content of Shamita	0.3	8.724	5	.000	.9161	1.6815
Fat Content of Katikala	-					
Fat Content of Kerkede	0.02	10.605	5	.000	1.1961	1.9615
Fat Content of Abara	0.6	6.709	5	.001	.6161	1.3815
Fat Content of Cheqa	0.9	4.694	5	.005	.3161	1.0815
Fat Content of Bordaa	0.6	6.709	5	.001	.6161	1.3815

Table 6: One-sample test of total fat content with different local drink.

Characteristics of Booka	Test Value = 0.03% to 2.9%				95% Confidence Interval of the Difference	
	Test Value	T	df	p-value	Lower	Upper
Crude Protein Content of Tella	0.3	23.179	5	.000	5.9690	7.4580
Crude Protein of Tejj	-					
Crude Protein of Daadhi	0.3	23.179	5	.000	5.9690	7.4580
Crude Protein of Shamita	2.9	14.202	5	.000	3.3690	4.8580
Crude Protein of Katikala	-					
Crude Protein of Kerkede	0.03	24.111	5	.000	6.2390	7.7280
Crude Protein of Abara	0.8	21.453	5	.000	5.4690	6.9580
Crude Protein of Cheqa	1.90	17.655	5	.000	4.3690	5.8580
Crude Protein of Bordaa	1.30	19.726	5	.000	4.9690	6.4580

Table 7: One-sample test of crude protein content with different local drink.

Characteristics of Booka	Test Value = 1.0% to 16.0%				95% Confidence Interval of the Difference	
	Test Value	T	Df	p-value	Lower	Upper
CHO Content of Tella	1.0	14.381	5	.000	6.2095	8.9125
CHO content of Tejj	-					
CHO content of Daadhi	10.6	-3.878	5	.012	-3.3905	-.6875
CHO content of Shamita	16.0	-14.149	5	.000	-8.7905	-6.0875
CHO content of Katikala	-					
CHO content of Kerkede	3.80	9.056	5	.000	3.4095	6.1125
CHO content of Abara	4.5	7.724	5	.001	2.7095	5.4125
CHO content of Cheqa	8.90	-.645	5	.547	-1.6905	1.0125
CHO content of Bordaa	7.80	1.447	5	.207	-.5905	2.1125

Table 8: One-sample test of total carbohydrate (CHO) content with different local drink.

Characteristics of Booka	Test Value = 0.1% to 0.5%				95% Confidence Interval of the Difference	
	Test Value	t	df	p-value	Lower	Upper
Ash Content of Tella	0.1	28.242	5	.000	.6486	.7784
Ash Content of Tejj	-					
Ash Content of Daadhi	0.2	24.284	5	.000	.5486	.6784
Ash Content of Shamita	1.1	11.340	5	.000	-.3514	-.2216
Ash Content of Katikala	-					
Ash Content of Kerkede	0.3	20.326	5	.000	.4486	.5784
Ash Content of Abara	0.3	20.326	5	.000	.4486	.5784
Ash Content of Cheqa	0.3	20.326	5	.000	.4486	.5784
Ash Content of Bordaa	0.5	12.409	5	.000	.2486	.3784

Table 9: One-sample test of total ash content with different local drink.

Conclusion and Recommendation

Among the oldest food processing; fermentation is one and it is almost applicable in all the country around the world. Among the fermented food alcoholic beverage processing had been widely consumed starting from prehistoric times. Traditional fermented alcoholic and non-alcoholic beverages are those that are an indigenous to specific location and also developed by the locally indigenously skilled man using primitive techniques. The raw materials also from the locally available and the cheapest. In the world a big assortment of fermented foodstuffs and beverages with old-fashioned (cultural) and traditional value. The multiplicity of such fermented food products derives from the heterogeneity of traditions found in the world, ethnic predilection, different topographical areas where they are created, and the indispensable and/or by-products used for fermentation.

Booka honey wine is the first animal origin fermented alcoholic beverage to be introduced scientifically. As interview conducted with elder people of Gujii till now consumption of drinking fermented and liquid Booka has an advantageous over the other local drinking. But this indigenous knowledge does not have focuses from the scientist or researcher. Further analysis will be required to enhance the Medical importance like Glycaemic index and toxicity of these traditional drinking. Nutritional profile also required by researchers and physicochemical analysis (methanol, ethanol level and turbidity of traditional alcoholic drinks) will also require further analysis. Antioxidant capacity and ant-nutrient potential also of "Booka" has not been determined. And lastly, determination of microbiological properties also recommended for further investigation.

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