

RESEARCH ARTICLE

BRANDING OF LOCAL ALCOHOL IN NEPAL

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ABSTRACT

Nisdi Rural Municipality, under the mandate of the Village Executive Office, conducted a study and research on the branding of local liquor. A team from Search Multipurpose Pvt. Ltd. visited various locations within Nisdi Rural Municipality in Palpa District to study and assess the production, use, and business status of local alcohol. The study aimed to determine the status of local alcohol production, particularly liquor made from pure millet. Following this, the research involved collecting and testing local liquor samples to evaluate the branding potential and identify which type of millet liquor could be suitable for branding. During the study, various methods were employed, including laboratory analysis, direct observation, stakeholder interviews, and a review of reference materials. The laboratory tests conducted after the study showed that the alcohol content in Tinpane liquor ranged from 33.14% to 41.25%, while Satpane liquor had an alcohol content between 21.79% and 23.07%. The study recommends that liquor with an alcohol content higher than 42.8% is considered inedible. The legal complexities surrounding local liquor were identified as a major challenge. However, the study suggests that by addressing these legal obstacles and completing the necessary processes for obtaining permits, local liquor branding, sales, and distribution could be successfully implemented. This would provide employment opportunities for the citizens of the municipality, leading to their financial prosperity.

KEYWORDS

Alcohol, Branding, Tinpane, Satpane, Millet

1. INTRODUCTION

1.1 Introduction to Alcohol

Alcohol refers to an alcoholic beverage containing ethanol, which is produced by fermenting sugar with yeast. Various types of alcoholic beverages are available in the market, including beer, wine, and spirits, each with different production methods, ingredients, and alcohol content. It is widely known that alcoholic beverages have been consumed around the world for thousands of years. The use of alcohol encompasses cultural, social, and economic dimensions worldwide. It plays significant roles in various societies, being deeply associated with social events, festivals, cultural heritage, and traditions (Shrestha and Tiwari, 2021). In many contexts, moderate alcohol consumption is also seen as part of a lifestyle.

Local alcohol made from the vapor of Jaad is called Rakshi. There are hundreds of types of Rakshi in the world. In Nepal, Rakshi refers to the common homemade alcoholic beverage (Baral, 2024). It is made from grains like millet or rice, and sometimes from fruits. Local alcohol, also known as "Gharelu Madira" or "local Rakshi," is recognized as a traditional alcoholic beverage in Nepal. The term "Gharelu Madira" specifically refers to various types of conventional alcoholic drinks produced and consumed within particular regions or communities. Gharelu Madira, or local Rakshi, is made using locally sourced ingredients and traditional methods (Niraula et al., 2004). It is called Gharelu Madira or local Rakshi because it is produced using local resources and traditional techniques. Historically, its tradition has been passed down through generations for thousands of years. Furthermore, the production and consumption of Gharelu Madira are deeply intertwined with cultural practices, social customs, and community identity (Shrestha and Tiwari, 2021).

In Nisdi Rural Municipality of Palpa district in Nepal, locals traditionally

prepare a type of alcohol known as **Tinpane, Charpane, Panchpane, Chhapane, Satpane, and Aathpane**, from millet using local knowledge, skills, and techniques. "Pane" refers to the number of times the condensing water is changed during the distillation of alcohol. For instance, Tinpane alcohol indicates the condensing water was replaced three times. Similarly, "Charpane," "Panchpane," "Chhapane," "Satpane" or Aathpane alcohol refers to the process in which the condensing water is changed four, five, six, seven, and eight times, respectively. Higher pane levels generally suggest better refinement and quality.

According to Fortune Business Insights, an organization that studies alcohol, the global alcoholic beverage market was \$1949.2 billion in 2023. As its business grows daily, it is expected to reach \$4102.3 billion by 2029. In 2022, China was the leading country in terms of revenue from the alcoholic beverage market with \$216.6 billion, while the United States was second with \$187.5 billion. According to various data, the revenue of the alcoholic beverage market in Nepal is \$680.9 million in 2023. It is expected to grow at an annual rate of 5.5%. The largest segment of the liquor market is wine, with a market size of \$386.2 million in 2023. In 2016, Business 360, a company that conducts studies on the same subject, stated that the annual consumption of local liquor in Nepal is about 85 billion rupees. 45 percent of the total liquor produced and imported by the country is consumed in Kathmandu alone.

In Nepal, foreign liquor worth 3 billion 720 million rupees has been imported in a year. According to the Department of Customs, Nepal imported liquor worth that amount from different countries in the last fiscal year 2078/079 BS (approximately 2021/2022 AD). During that period, liquor worth 3 billion 711 million 151 thousand 16 rupees entered Nepal, and in addition, 6.77 million 78 thousand 371 liters of liquor were imported. Homemade liquor is a traditional homemade alcoholic beverage that is very popular in rural areas of Nepal. Its preparation varies based on

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the location and is produced from grains.

While alcohol plays a role in many social and cultural settings, its excessive consumption can cause serious health problems. It can lead to liver disease, heart disease, hypertension, certain cancers, and a weakened immune system (Mousa, 2021). According to the National Institute on Alcohol Abuse and Alcoholism (2022), excessive consumption also affects the brain, causing poor judgment, memory loss, and mental illnesses like depression and anxiety. It can lead to accidents, addiction, family problems, and financial difficulties. Over time, regular heavy drinking can seriously harm both physical and mental well-being.

When consumed in moderation, alcohol may offer some health and social benefits. Studies suggest that moderate drinking, especially red wine, can enhance good cholesterol (HDL) and decrease the risk of heart disease (Chiva-Blanch and Badimon, 2019). Red wine also contains antioxidants like resveratrol, which is likely to increase cardiovascular health and digestive well-being. When consumed with friends during social gatherings, moderate use of alcohol will ease people's worries, calm them down, decrease stress, and induce bonding (American Heart Association News, 2019). Other studies also credit moderate drinking to improved blood flow and glucose and fat metabolism. The advantages, though, vary with each person and must be weighed against the risks. The key is mindful and moderate consumption.

1.2 Amount of alcohol to drink

According to dietary guidelines, adults should limit alcohol intake: women to 1 standard drink or less per day, and men to 2 or fewer per day. A standard drink contains approximately 14 grams (0.6 ounces) of pure alcohol, regardless of the type of alcoholic beverage (KERR and STOCKWELL, 2011). This standard helps in measuring and managing alcohol consumption.

Examples of one standard drink include (Patrias and Wendling, 2015):

- Beer: 12 ounces (about 5% alcohol)
- Wine: 5 ounces (about 12% alcohol)
- Distilled spirits (whiskey, vodka, rum, etc.): 1.5 ounce (about 40% alcohol)

For women, moderate drinking means consuming only one of the above in a day. For men, it means up to two standard drinks per day, whether of the same type or a mix.

2. OBJECTIVE OF THE STUDY

- To brand quality local liquor produced using traditional methods in Nisdi Rural Municipality, Palpa.
- To test and analyze the alcohol content and safety of various pane samples (Tinpane, Charpane, Panchpane, Chhapane, Satpane, and Aathpane).
- To assess the current status of local liquor production and consumption for effective branding recommendations.

3. RESEARCH AREA

The study was conducted in Nisdi Rural Municipality, located in the northeastern part of Palpa District in Lumbini Province. Covering an area of 194.4 sq. km, it lies within the Nisdi and Arunkhola watershed areas, stretching from Jure Lek to Bevoke. Characterized by hilly terrain and surrounded by the Mahabharata range, Nisdi holds significant geographical, natural, historical, cultural, and tourism potential. This rural municipality has 7 wards.

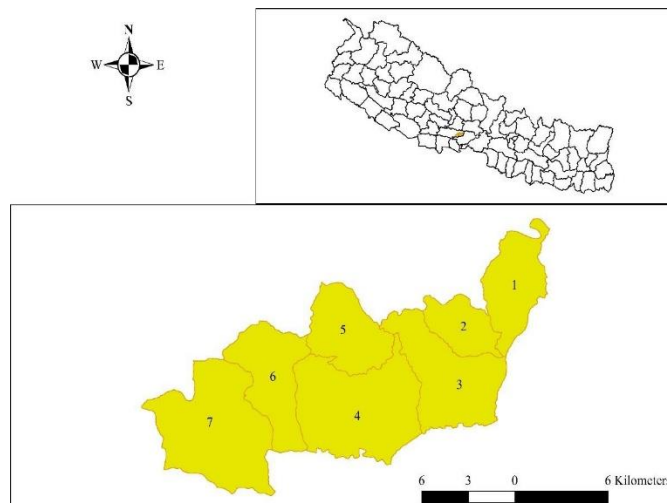


Figure 1: Map of Nisdi Rural Municipality

4. METHODOLOGICAL APPROACH

4.1 Discussion with Stakeholders

A discussion was held with stakeholders in Nisdi Rural Municipality on branding local liquor. It focused on identifying wards and villages involved in liquor production, potential producers and sellers, and selecting individuals to test alcohol content. In this discussion, local representatives of the municipality and people from the liquor-producing community were present, and the location and place for liquor production were determined.

4.2 Sample Collection of Alcohol

- Alcohol of Tinpane, Charpane, Panchpane, Chhapane, Satpane, and Aathpane was prepared using local knowledge, skills, and technology from millet.
- Liquor was collected according to the variety and quality produced.
- Separate samples of the prepared liquor were collected.

In this municipality, in the process of branding local liquor, the first phase of the first sample collection was conducted on 2080/11/06 BS according

to the schedule by Search Multipurpose Pvt. Ltd. For the sample collection, 21 days before 2080/10/15 BS, the millet was boiled and kept in a drum for fermentation to make liquor. After 21 days, the 'Jaad' prepared in the said drum was used on 2080/11/06 BS to make liquor. Similarly, for the second time, on 2081/03/12, liquor samples were collected in wards 2 and 3. For the liquor collection, millet was boiled and kept for fermentation in a container for 13 days prior in ward 2, and 16 days prior in ward 3. To make the research reliable and to find out whether the quality and percentage of the liquor are consistent, and to discover new facts, millet was boiled and fermented in a container for different periods, and after a certain time, the liquor was made, and samples were taken.

For the first collection of millet liquor samples, 3 samples were made. While making the samples, they were separated into sample 1, sample 2, and sample 3. Thus, dividing the samples into 3 places, 3 fire stoves were built to extract the liquor by distillation. In this, the 3 stoves were marked with numbers up to 3, and each stove was sample 1 = stove no. 1, sample 2 = stove no. 2, and sample 3 = stove no. 3. Upon the request of the locals, an additional sample 4 was made by extracting only 3 pane of 6-month-old Jaad and marked as new stove no.4= sample 4.

A set of items was arranged for each stove. For Stove No. 1, the set included a copper container, slate condenser, earthen trough, and slate pot for water. Stove No. 2 also had a copper container, slate condenser, earthen

oven, and slate pot for water. For Stove No. 3, the set included a copper container, copper condenser, earthen oven, and slate pot for water. Similarly, Stove No. 4 was equipped with a copper container, slate condenser, earthen oven, and slate pot for water.

For the second round of sample collection of millet alcohol, two samples were made, one in Ward No. 2 and one in Ward No. 3. While making the samples, they were separated as Sample 5 and Sample 6. Thus, after dividing the samples into two places, two fire stoves were built, one in Ward No. 2 and one in Ward No. 3, to distill and extract the alcohol in two places. In this process, the two stoves were marked with two numbers as Stove No. 5 and Stove No. 6, and Sample 5 = Stove No. 5 and Sample 6 = Stove No. 6 were created. In this, Stove No. 5 of Ward No. 2, meaning Sample 5 = Stove No. 5, and Stove No. 6 of Ward No. 3, meaning Sample 6 = Stove No. 6, were marked.

In each of the two stoves, a set of slate containers, slate condenser, earthen pot, and copper pot for water drainage was arranged in Stove No. 5, and a set of copper containers, slate condenser, earthen pot, and slate pot for water drainage was arranged in Stove No. 6. Even though it was mentioned to use copper utensils wherever possible, not all utensils could be made of copper due to the inadequacy of copper utensils. Therefore, sets of copper, clay, and silt utensils were made. Distilled plastic bottles (bacteria-proof) were used for sample collection. After all the materials were prepared, the process of making alcohol (distillation) began. One local person was assigned to each stove for making alcohol. One employee from Search Multipurpose was present to measure the temperature, while other employees were also involved in the alcohol-making process. After measuring the temperature in each batch, another employee from Search Multipurpose was present to seal and store the distilled alcohol at a rate of 250 grams per bottle. After all the preparations were done, each sample was taken out to be sealed in a bottle distilled at a low temperature.



Figure 2: Preparation of Alcohol

Table 1: Collected Sample

Sample 1			
SN	Pane	Temperature	Gram
1	Tinpane	60°C	250 grams
2	Charpane	59°C	250 grams
3	Panchpane	58°C	250 grams
4	Chhapane	57°C	250 grams
5	Satpane	62°C	250 grams
Sample 2			
SN	Pane	Temperature	Gram
1	Tinpane	60°C	250 grams
2	Charpane	60°C	250 grams
3	Panchpane	62°C	250 grams
4	Chhapane	58°C	250 grams
5	Satpane	57°C	250 grams
Sample 3			
SN	Pane	Temperature	Gram
1	Tinpane	63°C	250 grams
2	Charpane	59°C	250 grams
3	Panchpane	58°C	250 grams
4	Chhapane	60°C	250 grams
5	Satpane	60°C	250 grams
6	Aathpane	59°C	250 grams
Sample 4			
SN	Pane	Temperature	Gram
1	Tinpane	65°C	250 grams
Sample 5			

Table 1 (cont): Collected Sample

SN	Pane	Temperature	Gram
1	Tinpane	60°C	250 grams
2	Charpane	64°C	250 grams
3	Panchpane	62°C	250 grams
4	Chhapane	58°C	250 grams
5	Satpane	57°C	250 grams
Sample 6			
SN	Pane	Temperature	Gram
1	Tinpane	62°C	250 grams
2	Charpane	60°C	250 grams
3	Panchpane	61°C	250 grams
4	Chhapane	58°C	250 grams
5	Satpane	57°C	250 grams

Six samples were taken for the lab test. For sample No. 1, a total of five samples were taken from Tinpane to Satpane for lab testing. Similarly, for sample No. 2, a total of five samples were taken from Tinpane to Satpane for lab testing, while for sample No. 3, a total of six samples were taken from Tinpane to Aathpane for lab testing. Similarly, for sample No. 5, samples were taken from Tinpane to Satpane, and for sample No. 6, a total of five samples were taken from Tinpane to Satpane for lab testing. As per the proposal of the locals, only one sample of Tinpane was taken from sample No. 4. In this way, a total of 27 samples were taken for lab testing.

In this branding process, first, the measurement of dry millet and Marcha was taken for all six samples to make Jaad (local alcohol). The measurement of Jaad was also taken while preparing Rakshi (local alcohol). The measurement is as follows.

Table 2: Measurements

SN	Weight of Dry Millet	Weight of Jaad (Local Alcohol)	Weight of Marcha (Yeast Starter)
Sample 1	3.3 Kg	8 kg	35 Gram
Sample 2	3.3 Kg	8 kg	30 Gram
Sample 3	3.3 Kg	8 kg	25 Gram
Sample 4	3.3 Kg	8 kg	30 Gram
Sample 5	6.6 Kg	16 kg	35 Gram
Sample 6	4.95 kg	12 kg	30 Gram

4.3 Marcha (Yeast cake/starter culture)

In Nisdi, the local communities mostly make Marcha, though a few people are also found to buy it from the market. In this municipality, Marcha makers are found to make it from a mixture of ingredients such as millet flour, chini jhar (a type of plant), konya jhar (another type of plant), and mulpot (roots of medicinal plants). While making Marcha, marati (another type of plant) and chabu (leaves of another plant) are also used. After mixing these ingredients, it is shaped into a roti (flatbread), wrapped in straw, covered with cloth, and sun-dried for 3-4 days until the Marcha is ready. It is then used.

The Marcha made here is made from a mixture of the following ingredients (Subba et al., 2018):

- Kodo ko pitho (Millet flour)
- Chini jhar
- Konya jhar
- Mulpot
- Marati
- Chabu

4.4 Sample testing of alcohol

The prepared alcohol was tested in the laboratory to measure the amount of alcohol. The quantitative method of alcohol used in this study is the

method adopted by the Department of Food Technology and Quality Control of Nepal, and this method is considered the most suitable method in the world for alcohol.

**Figure 3:** Samples of different alcohols prepared

4.5 Preparation of Distilled Water

In the process of measuring the amount of alcohol, pure water (distilled water) is required in the lab, so the distillation method was used to prepare pure water (distilled water). According to this method, the first 400 mL of tap water was placed in a distillation flask. Then, the distillation flask was connected to the distillation tube, and a structure was arranged to collect the vapor into a volumetric flask. The distillation tube was connected to the water stream in such a way that water would enter from the bottom and exit from the top, ensuring a continuous flow of water. The water was heated through gas by placing it in a distillation flask. In this situation, a stand was used to hold the distillation flask above the gas. After the required amount of water was purified, the pure water (distilled water) was collected in the volumetric flask and stored in a glass container.

4.6 Purification of Alcohol

The distillation method was used for the purification of alcohol. According to this method, first, a 200 ml sample of alcohol and 25 ml of distilled water were placed in a distillation flask. Then, that distillation flask was connected to a distillation tube, and an arrangement was made to collect the vapor into a volumetric flask by converting it into liquid. The distillation tube was connected to a water tap in such a way that water would enter from the bottom and exit from the top, ensuring a continuous flow of water. After setting up everything, 200 ml of an alcohol sample and 25 ml of pure water were heated in a distillation flask for 35 minutes using gas. In this situation, a stand was used to hold the distillation flask above the gas. After 35 minutes, the volume of the sample collected in the volumetric flask was measured. If the collected sample was less than 200 ml, pure water (distilled water) was added to make it 200 ml. This sample was then kept in a refrigerator at 20 degrees Celsius for further analysis. A thermometer was used to measure the temperature.



Figure 4: Purification of alcohol through the distillation method

4.7 Measurement of Alcohol Content in Liquor

4.7.1 Sample Weight Determination

In the first phase of research for branding local alcohol in Nisdi Rural Municipality, the alcohol content of the liquor was measured using the pycnometer method. In this pycnometer method, the pycnometer and distilled water were first cooled to 20 degrees Celsius in a refrigerator. A thermometer was used to measure the temperature. In the pycnometer method, the liquor temperature must be exactly 20 degrees Celsius when taking the weight of a certain amount of liquor. Therefore, to maintain the temperature at exactly 20 degrees Celsius during the weight measurement, it was kept outside the refrigerator if the temperature was below 20 degrees Celsius, and inside the refrigerator if it was above 20 degrees Celsius.

Here, the weight of distilled water is measured. The distilled water is at 20 degrees Celsius. 50 ml of this distilled water was placed in a pycnometer and then weighed using a weighing machine that displays up to two decimal places (000.00) in grams. In the same way, the weight of the empty pycnometer was also taken at 20 degrees Celsius. Similarly, the weight of all alcohol samples was taken by maintaining the same temperature of 20 degrees Celsius. The amount of alcohol was measured using the pycnometer method. For this, the specific gravity of the samples was first identified. The following formula was used to identify the specific gravity of the samples.

Specific Gravity = $\frac{\text{Weight of pycnometer filled with the wine sample} - \text{Weight of empty pycnometer}}{\text{Weight of pycnometer filled with water} - \text{Weight of empty pycnometer}}$

After calculating the specific gravity value of each sample, the amount of alcohol was determined by comparing it with the table in the schedule based on the specific gravity value. The method used in this study is the method adopted by the Department of Food Technology and Quality Control of Nepal, and this method is considered to be the most suitable method in the world for wine.

4.7.2 Edibility Test

Millet alcohol has been drunk in Nepal for centuries. The practice of consuming homemade alcohol is not a recent phenomenon. The tradition of alcohol consumption is as old as the origin of mankind. In ancient religious texts and Puranas, it is found that even the gods used to consume it as 'Somras'. Since then, alcohol has been consumed in the Nepali community. Considering this, it can be considered a food item because it has been tested in the Nepali community. Many elements and compounds

are found in any sample of water or alcohol. Therefore, it is not possible or necessary to test all types of elements and compounds. Generally, alcohol does not contain other non-edible substances. Therefore, in this study, alcohol is classified as edible or non-edible based on the amount of alcohol it contains. Alcohol with a higher alcohol content than that found in branded alcohol available in the market is classified as non-edible, and alcohol with a lower alcohol content is recommended as edible. The amount of alcohol found in the main alcoholic beverages available in the markets of Nepal is as follows (Thapa et al., 2015):

Table 3: Amount of alcohol in different Beverages		
SN	Name of Alcohol	% of Alcohol
1	Black Label	40
2	Red Label	40
3	Old Durbar	42.80
4	Vodka	40
5	Signature	42.8
6	Khukuri Rum	42.8
7	Royal Stag	42.8
8	Gin	40
9	8848	40
10	Beer	5 (average)

Based on similar information, this study does not recommend consuming alcohol with more than 42.8% alcohol content, stating it is non-food grade. It is recommended not to drink such alcohol or to drink it only with added water.

4.8 Branding Process

The governments of Lumbini and Gandaki provinces have initiated the process to enact laws related to supporting the production, branding, and sale of local liquor to boost income generation. Local governments, being autonomous, are also working on completing all procedures and formulating laws. With support from federal and provincial governments, the branding of local liquor can be advanced.

The following process is recommended for branding local liquor:

- Form a group of local liquor producers to establish small-scale cottage industries.
- Register the industry at the Cottage and Small Industries Office or the Company Registrar's Office.
- Obtain VAT/PAN from the relevant Internal Revenue Office.
- Pay excise duty and other taxes as per regulations at the relevant Internal Revenue Office.
- Produce liquor in the required quantity.
- Test the alcohol content in the liquor using the method mentioned in the study report.
- Bottle and market the product, mentioning the ingredients, quality, price, and alcohol content.
- Monitor the entire process through a local committee.

5. RESULTS AND DISCUSSION

Researchers tested samples of various alcoholic beverages brought from Nisdi Rural Municipality in the laboratory using search multi-purpose methods and determined the percentage of alcohol in them. The amount of alcohol in different types of alcoholic beverages is presented in the table below.

Table 4: Amount of alcohol in various types of liquor.				
SN	Sample	Weight (Gm)	Sp. Gravity	% of Alcohol
1	Empty Pycnometer	28.34		
2	Distilled Water	78.01		
Tin Pane				

Table 4 (cont): Amount of alcohol in various types of liquor.

3	Tinpane (Sample 1)	75.41	0.9477	41.25
4	Tinpane (Sample 2)	76.02	0.9599	33.14
5	Tinpane (Sample 3)	75.78	0.9551	36.53
6	Tinpane (Sample 5)	75.85	0.9565	35.57
7	Tinpane (Sample 6)	75.91	0.9577	34.73
Char Pane				
8	Charpane (Sample 1)	75.98	0.9591	33.73
9	Charpane (Sample 2)	76.11	0.9617	31.78
10	Charpane (Sample 3)	75.95	0.9585	34.16
11	Charpane (Sample 5)	76.03	0.9601	32.99
12	Charpane (Sample 6)	76.09	0.9613	32.09
Paanch Pane				
13	Panchpane (Sample 1)	76.19	0.9634	30.45
14	Panchpane (Sample 2)	76.32	0.9660	28.31
15	Panchpane (Sample 3)	76.29	0.9654	28.81
16	Panchpane (Sample 5)	76.3	0.9656	28.64
17	Panchpane (Sample 6)	76.31	0.9658	28.47
Chha Pane				
18	Chhapane (Sample 1)	76.39	0.9674	27.12
19	Chhapane (Sample 2)	76.63	0.9722	22.89
20	Chhapane (Sample 3)	76.58	0.9712	23.79
21	Chhapane (Sample 5)	76.6	0.9716	23.43
22	Chhapane (Sample 6)	76.61	0.9718	23.25
Sat Pane				
23	Satpane (Sample 1)	76.62	0.9720	23.07
24	Satpane (Sample 2)	76.69	0.9734	21.79
25	Satpane (Sample 3)	76.67	0.9730	22.16
26	Satpane (Sample 5)	76.68	0.9732	21.98
27	Satpane (Sample 6)	76.7	0.9736	21.61
Aath Pane				
28	Aathpane (Sample 3)	76.8	0.9738	21.42
29	Tinpane (Sample 6)	75.86	0.9567	35.43

A total of 27 samples of alcohol were collected from Nisdi Rural Municipality and tested in the laboratory. The samples were collected from 6 different Samples. Among the samples obtained from Sample number 1, the highest amount of alcohol was found in "Tinpane" (a local alcohol), and the lowest amount of alcohol was found in the "Tinpane" sample obtained from Sample number 2. The "Tinpane" liquor obtained from Sample number 1 contained 41.25% alcohol. Additionally, the "Tinpane" liquor obtained from Sample number 2 contained 33.14% alcohol, the "Tinpane" liquor obtained from Sample number 3 contained 36.53% alcohol, the "Tinpane" liquor obtained from Sample number 5 contained 35.57% alcohol, and the "Tinpane" liquor obtained from Sample number 6 contained 34.73% alcohol.

The alcohol content in "Tinpane Rakshi" (locally brewed alcohol) obtained from a separate container (Sample) was found to be 35.43%. This had been prepared and kept for 6 months using pure millet and "Marcha" (a fermentation starter). Similarly, the alcohol content in "Satpane Rakshi" obtained from Sample No. 1 was found to be 23.07%. Also, the alcohol content in "Satpane Rakshi" obtained from Sample No. 2 was 21.79%, from Sample No. 3 was 22.16%, from Sample No. 5 was 21.98%, and from Sample No. 6 was 21.61%. The alcohol content in "Aathpane Rakshi" obtained from container No. 3 was 21.42%. The alcohol content in "Tinpane Rakshi" is comparable to that of branded liquor available in the market. Consuming such alcohol directly can harm the human body. Therefore, such alcohol should not be consumed directly. It should be diluted with water to reduce the alcohol content before consumption.

As the proofing of alcohol increased in the lab testing of liquor, the amount of alcohol in the liquor decreased, so this result was found to be inconsistent with the general principles of local liquor. In this study, the pycnometer method was used. This method is the best method for measuring the amount of alcohol in liquor in India and Nepal. The

Department of Food Technology and Quality Control under the Government of Nepal also uses this method to test the amount of alcohol in liquor. Therefore, this method was also used during this study.

6. CONCLUSION

The study of all the collected 27 samples in the municipality revealed that there is significant potential for branding homemade liquor in Nisdi Rural Municipality, Palpa. The results showed varying alcohol content even when similar ingredients and local methods were used. For instance, Tinpane liquor contained between 33.14% to 41.25% alcohol, while Satpane liquor ranged from 21.79% to 23.07%. The most popular variety was the 3 Pane liquor. These variations highlight the limitations of traditional brewing techniques and the difficulty in maintaining consistent quality control. Based on lab findings and existing research, alcohol with more than 42.8% content is considered inedible and should either be avoided or diluted before consumption.

The study recommends branding and commercial production of local liquor, especially 3 Pane 'Rakshi', as it falls within the acceptable alcohol range. Char and Panch Pane liquors may also be branded if their alcohol content is disclosed. Given that alcohol levels fluctuate with each batch, it is essential that all branded products, whether local or commercial, undergo alcohol content testing and proper labeling. This ensures consumer safety and supports the responsible commercialization of traditional brews in the municipality.

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