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Nutritional Beverages

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ABSTRACT

The word 'Beverage' has been derived from the Latin word 'bever' meaning rest from work. At the most basic level, beverage are the portable drinks other than water that humans can consume to satisfy energy, thirst or hydration. Beverages are not usually consumed for their food value, but many, particularly the fruit drinks, contain quite a high percentage of sugar, vitamins and minerals, and, therefore, add to the energy content of the diet. They may be in the form of freshly squeezed juices to chemical-packed energy drinks. For hundreds of thousands of years, the idea of a beverage was restricted to water, milk or any fruit juice but with passage of time, there came alcohol, wine, various teas, coffees, cocktails, ciders and sodas, A wide range of plant materials are used to manufacture beverages. Broadly, there are two types of beverages alcoholic and non-alcoholic beverage". Former is used as a generic term for beverages that contain more than 2.50% alcohol by volume, nevertheless such that the minimum age provision in applies to beverages containing between 0.70 and 2.50 per cent alcohol by volume. These include leaves, stems, sap, fruits, tubers, and seeds (grains). China and India are the fastest growing markets for non-alcoholic beverages.

Keywords: Beverage, energy drinks, alcoholic, non-alcoholic beverages

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INTRODUCTION

Beverage is any drink used to satisfy energy need of the body. The global beverage industry has grown reasonably for the past few years with an average growth by 3.4% since 2009 and expected to accelerate for next years. Amongst different types of drinks, the soft drinks segment including bottled water, carbonates, juice, concentrates, functional drinks, tea and coffee have been the most lucrative followed by beer, cider and other flavored beverages. Awareness about good health has motivated young people to shift from alcoholic beverages to other ones. The competition in global non-alcoholic beverages market is reported to be huge mostly in the developed world, such as the North America and European region. Non-alcoholic beverages can be classified into carbonated and non-carbonated beverages**.** Carbonated beverages contain cola beverage with carbonated water, such as soft drinks**.** More than 30% of the global share is covered by carbonated soft drink products. Non-carbonated beverage market contains fruit juice, ready-to-drink coffee, tea, energy drinks, bottled water and isotonic drinks**.** The non-alcoholic beverage market size was around USD 1545 billion in 2015 and is expected to reach USD XX billion by 2023, growing at 4.4% CAGR during the forecast period 2018-2023.[1]

The global alcoholic beverages market has witnessed impressive growth over the last couple of years driven by a number of favorable factors. Growing urban population coupled with emerging economies is leading individuals to explore new forms of entertainment such as night parties and spending time at bars, lounges. Further, young adults with high family incomes, high social media influence, and easy access to alcoholic drinks are other prominent factors driving sales of alcoholic drinks. Stress relieving property of alcoholic drinks has inclined people towards their increased consumption in urban areas. However, adverse health effects after excessive consumption of alcohol has created awareness in young adults. As per a report released by WHO in 2014, 3.3 million deaths each year are related to excessive consumption of alcohol. According to a report by Transparency Market Research, the global alcoholic beverages market is likely to expand at a CAGR of 6.4% between 2017 and 2025. The global alcoholic beverages market is estimated to be worth US$1,205,359.1 million by the end of 2017.[2] The market is estimated to grow with an average growth of 4.1% between the years 2013 - 2018 to reach approximately 2,245 billion USD. With an average growth of 1.7%, European market collected a total revenue of 719 billion USD, since 2009. In 2013, the Asia - Pacific region grew to approximately 516 billion USD, with an average growth rate of 5.7% since 2009. Europe and Asia – Pacific regions are forecasted to grow at the rates of 2.4% and 6.6%, respectively. The global industry’s total consumption volume

increased 3.5% from 767.8 billion liters in 2012 to 794.6 billion liters in 2013 and will have an increment of 25.1% to 994.1 billion liters for next budget session (**Figure 1**).

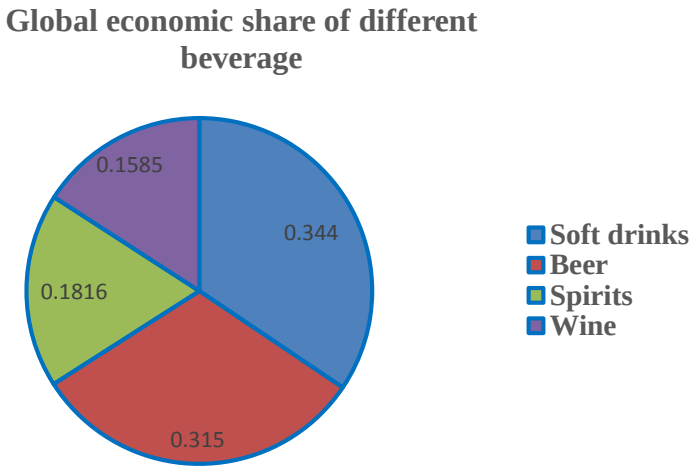


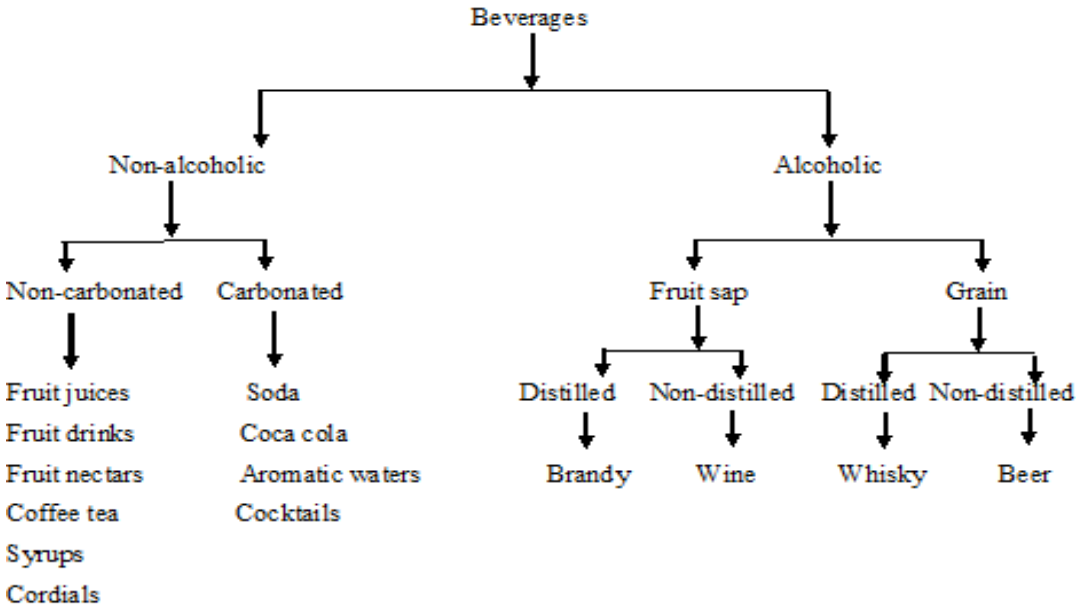
Figure 1. Global economic market share of different beverage

Consumer Preference

With increase of awareness towards health, choice of people for healthier drinks reflect new global purchasing patterns for beverages. Consumers in developed countries are moving away from soft drinks. They are preferring milk and other natural, low-sugar, antioxidant rich drinks (87%) over carbonated beverages. This was followed by ready-to-drink (RTD) juices, bottled water and powdered juice, reaching 80.7 %, 76.5% and 70% of global market choice .[3]

Classification of Beverages

On the basis of source, type of beverage may be classified as following:



Non-Alcoholic Beverage

Non-alcoholic beverages refer to non-toxicated drinks that don't contain any bit of liquor by volume. They are considered as stimulants and refreshers and available in many pickings such as bottles, cannes, or open liquids that can be used as and when required e.g., aerated water, mineral water, juices, squashes, syrups, tea, coffee, milk, juices, sodas, milk, tea, coffee, and other energy drinks. While these drinks have a variety of health benefits, they are consumed according to the choice and palate. In U.S. non-alcoholic beverages are defined as drinks that contain no more than 0.5% alcohol by volume.

Non-alcoholic drinks are also known as soft drinks or virgin drinks and can be consumed at any time or sold without any strict law. In health care industries, they are essentially provided as a part of nutritional supplement with or without meal to the customer. Despite the fact that most beverages, possess water as the important ingredient but water itself is not classified as a beverage.

In the modern world, to full fill the energy requirement of people, production of microbiologically safe non-carbonated non-alcoholic fruit juices appended with various functional ingredients has been in great demand.[4] They can be used for making cocktails, mock tails, or diluting whisky, rum and other alcoholic drinks. Non-alcoholic versions of alcoholic beverages such as beers (near beer) that are processed to remove alcohol content to a negligible quantity are widely available in the market. Non-alcoholic drinks have following characteristics:

- More or less natural sugar content
- Act as stimulant
- Supply energy to the body
- Possess high nutritive value in terms of proteins, vitamins
- Hydrate the body

Classification of non-alcoholic beverages

Broadly beverages of non-alcoholic type are categorized on the basis of their nutritional value and frequency of usage of the contents of single container (Figure 2).

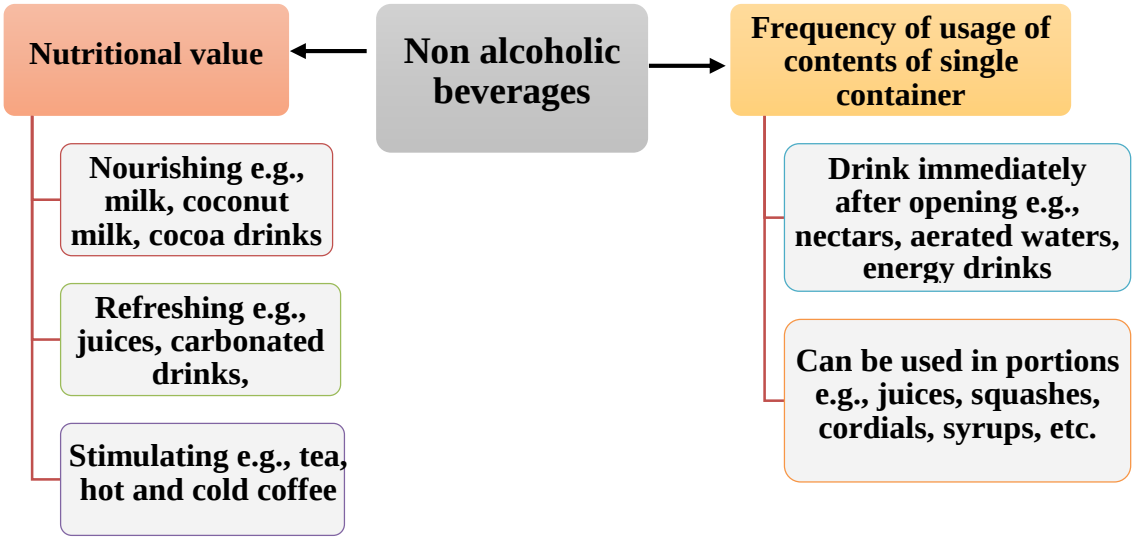


Figure 2: **Classification of non-alcoholic beverages**

I. According to their nutritional value they are classified in to following three categories

Nourishing beverages

These drinks are rich in carbohydrates, proteins, fats that impart them high food value. Examples are cocoa drinks, egg drinks, milk. Children and nursing mothers are suggested to take these drinks.

Refreshing beverages

This group of drinks include commercial carbonated drinks, fruit and vegetable juices.

Stimulating beverages

They are regarded as invalid drinks due to their medicinal properties. They are general herbal extracts or decoctions such as tea coffee that stimulate the central nervous system. Other common example is infusion made from lemon grass used to increase the appetite.

II. On the basis of usage of contents of the container, soft beverages can be divided into two groups

a) Those that are drunk immediately after opening. These don't need addition of any preservative if processed and packaged properly.

i. **Nectars**

These are non-carbonated soft drinks made by mashing fruit pulp. They normally contain 30 percent fruit pulp and are drunk immediately after opening. It is differentiated with any drink that has been labeled as fruit juice by the industry as it is not 100% fruit juice, and may or may not contain other ingredients such as water, sweeteners, and preservatives. There are no industry standards and so you can have a fruit nectar having fruit juice from anywhere in the range of 0-100%. It differs from fruits juices as nectar is a natural drink prepared by crushing the pulp of a

fresh fruit. It contains no preservatives and flavors whereas fruit juice is freshly squeezed from fruit pulp and is treated against deteriorated and spoilage, or processed into a concentrate where water is extracted from the juice. Fruit nectar is a fruit juice containing a lower percentage of juice than pure fruit juice. When two or more fruit juices are mixed, the drink is called a nectar blend. While a fruit juice contains 100% fresh fruit juice that has been processed after extracting water from it, nectar contains lesser percentage of fruit juice and has other ingredients including preservatives and sugar.

ii. **Bottled Water**

According to FDA (Food and Drug Administration) bottled water is a water sealed in bottles or any other container without addition of any ingredient that is intended for human consumption. The water derived from soil or natural water sources, are added with minerals, treated with process of cleaning and sterilizing and before trading. Some brands of mineral water include: - Bisleri, Aquafina, Mount Kailash (India), Sosro (Indonesia). This water is consider as a suitable antimicrobial and safe drinking water.

iii. **Aerated waters**

It is widely used for diluting spirits with soft and cold drinks, like rum and coke, whiskey and soda water, gin and tonic water, etc. It not only adds to the taste on it but also enhances color & flavor and eye appeal. Artificial Mineral Water made by adding perfumed and flavored materials, as well as preserving by CO2. These types of drinks are known as soft drinks. Several types of artificial mineral water Ginger, Lemonade and Strawberry are widely available in the market but amongst them some are very common e.g.,

Soda water which contain water, sugar and CO_2 as main ingredients.

Cola (Pepsi, Coca Cola and RC Cola) containing sugar water, chocolate caramel preserved by CO_2 as basic ingredients.

iv. Energy drinks

The recent craze over energy drinks is understandable in our fast-paced world. They tend to have slightly less caffeine than an average cup of coffee, despite how they're marketed, but that isn't the main problem. While they may give you a healthy energy boost, some of that is coming in the form of sugar.

b) Those that are used in portions and stored between usages.

They are preserved mainly by pasteurization or inbuilt sugar content as in, syrups and squashes but some FDA permitted preservatives can also be added to prolong the shelf-life after opening.[5]

i. **Squashes**

Squash is a non-alcoholic concentrated syrup used in beverage making. It is usually made from fruit juice, water, and sugar or its substitute. These normally contain at least 25% fruit pulp mixed with sugar syrup. Squashes contain preservatives such as potassium sorbate or sulfites. They have good shelf life because of the preservatives and high sugar content. To increase their appeal modern squashes are added with food coloring and flavoring substances. Some traditional squashes contain herbal extracts, such as orange, and ginger. Squash is mixed with a water or carbonated water or alcoholic beverage to prepare a cocktail. They are diluted to taste, with water. Nonetheless, they are commonly kept in refrigerators.

ii. **Juices**

These are pure fruit juices without addition of any extra substance. Juices can come in as many varieties as there are types of fruits and vegetables. They are available as freshly squeezed to concentrates. Due to high nutritional value in the form vitamins and minerals, juices play a huge part in daily life. Generally, marketed fruit juices are altered with additional sugars and other additive such as fillers or flavourings.

➢ **Fruit juices**: Fruits juice is a natural product that contains few or no additives. Juices are extracted by crushing fruit berries; collecting concentrates and mixing them with water and sometimes sweetened. Percentage of water determines their nutritive value. Citrus products such as orange is familiar breakfast drinks, while pineapple, apple, lime, guava, lemon juice, raspberry, blackberry and currants are also very common at serving table. Coconut water, a highly nutritious and refreshing juice, is highly in modern trend. Fruits are highly perishable so the ability to extract juices and store them was of significant value. Some citrus fruits are highly acidic which require their mixing with water and sugars to make them palatable.

➢ **Vegetable juices:** Vegetable juices such as tomato, carrot, cucumber juice are popular vegetable juices. They are usually served warm or cold. Some vegetable juices are mixed with some fruit juice to make it better in taste. Vegetable juices are rich in their mineral content, such as tomato juice, is high in sodium, and therefore, they must be consumed with care.

iii. **Cordials**

A cordial is a refreshing and revitalizing preparation intended for a medicinal purpose. Most cordials were of European origin, first produced in Italian apothecaries. *Oyal usquebaugh* is a spicy concoction containing flecks of gold leaf. It was usually flavoured with aniseed, liquorice and saffron and sweetened with fruit sugar extracted from figs and raisins by maceration. Various concoctions are known for their health benefits, especially for the heart**.**

iv. **Syrups**

Syrup is a thick liquid consisting of a concentrated solution of sugar and water with or without addition of a flavoring agent or a medicinal substance. A variety of beverages and juices are added with sweeteners to mask the unpleasant taste of fruits and vegetables. Granulated sugar does not dissolve easily in cold drinks or ethyl alcohol. Since the following syrups are liquids. They are easily mixed with other liquids in mixed drinks, making them superior alternatives to granulated sugar.

➢ **Flavoured syrups**: These syrups are made by infusing simple syrups with flavoring agents during the preparation. A wide variety of flavoring agents can be used, often in combination with each other, such as herbs (rosemary), spices (cardamom), or aromatics (orange peel; lemongrass). Flavoured syrups such as *syrupus aromaticus*, prepared by adding certain quantities of orange flavour and cinnamon water to simple syrup, is commonly used at coffee bar, to make flavoured drinks especially in the United states. For example, Infused simple syrups can be used to add sweetness to desserts, and flavor to cocktails.

➢ **Non-flavoured syrup:** A basic sugar-water syrup is used as a sweetener to make cocktails. Simple syrup is made by dissolving granulated sugar into hot water and then cooling the solution. Generally, the ratio of sugar to water vary according country's specifications from 1:1 to 2:1 by weight, or by volume. For pure sucrose the saturation limit is about 5:4 by volume. Syrup can be used as a sweetener. However, since the syrup jelly obtained by adding pectin is used as a base for fruit sauces, toppings, for culinary purposes. Dissolving "Demerara sugar", a type of natural brown sugar, with water produces Demerara syrup. Sugar substitutes such as honey or agave nectar can also be used to make simple syrups.

Gomme syrup (or gum syrup; *gomme* is French for "gum") is an ingredient commonly used in mixed drinks. It is also commonly used as a sweetener for iced coffee in Japan. Like bar syrups, it is a 2:1 sugar and water mixture, but has an added ingredient of gum arabica. Gomme syrup is made with the highest ratio of sugar to water possible, while the gum arabic prevents the sugar from crystallizing and adds a smooth texture.[5]

v. **Tea**

Tea is the second most consumed drink in the world. It is prepared by infusing dried leaves of the *camellia sinensis* shrub, in boiling water. Lemon or milk and sugar are among the most common additives worldwide. Tea comes in many different forms, including black, green, white, oolong, and puer. herbal teas made from various herbs and spices, like cinnamon, honey, pine needle, chamomile, echinacea and many others are also of demand. Each tea variety promises certain health benefits by delivering antioxidants, nutrients, minerals and caffeine. A large piece of

evidence report innumerable health benefits of tea due to its anti-inflammatory, anti-anxiety and antioxidant, bronchodilator, immunomodulator properties. Tea is served and consumed differently from country to country. In Indonesia, fresh ginger tea, in Bhutan, Nepal, and Tibet, tea added with butter and salt, in Taiwan bubble, mint tea in North Africa; cardamom in Central Asia. in Thailand and the United States tea is often served cold (as "iced tea") or with a lot of sweetener; in India hot tea prepared by boiling tea with water, milk and blending it with spices is famous as masala chai. Tea leaves can be processed in different ways resulting in a drink which appears and tastes different. Chinese yellow and green tea are steamed, roasted and dried; Oolong tea is semi-fermented and appears green-black and black teas are fully fermented.

vi. **Coffee**

Coffee is a brewed drink prepared from the roasted seeds of several species of an evergreen shrub of the genus *Coffea*. The two most common sources of coffee beans are Coffee arabica and *Coffee canephora*. Riped coffee "berries" are picked, processed and dried to yield the seeds inside. The seeds are then roasted to varying degrees, grounded and brewed to create coffee. Degrees of roasting of coffee beans imparts variable flavour to beans. Coffee is primarily used as stimulant due to high levels of caffeine found in it. Billions of cups of coffee are drunk every year around the world. Roasted coffee beans can come in many different varieties and flavours.

Coffee is acidic in nature (pH 5.0–5.1) and express stimulating effect on humans because of its caffeine content. It is one of the most popular drinks in the world.

vii. **Cocoa**

Though cocoa is considered as a sweet treat, and not a healthy beverage, but there are a large number of health benefits. The flavonoids present in cocoa beans improves blood circulation, lower blood pressure and improve heart health. The flavonoids in hot chocolate also prevent platelets aggregation. Hot cocoa drink is made by dissolving cocoa powder in hot water or milk.

viii. **Milk**

Milk is an emulsion or colloid of fat globules within a water-based fluid that contains dissolved carbohydrates and protein aggregates with minerals. Biologically, milk is produced by the mammary glands of mammals. It is considered as a fundamental contributor to improving nutrition particularly in developing countries. It is the primary source of nutritional food source for young mammals before they are able to digest other types of food. Early-lactation milk contains colostrum, which transports the mother's antibodies to the baby that help in reducing risk of many diseases in the baby. It also contains all the principal requirements including energy (lipids, lactose, and protein), biosynthesis of non-essential amino acids supplied by proteins (essential

amino acids and amino groups), essential fatty acids, vitamins and inorganic elements necessary for health. Milk with added sugar colour and artificial or natural flavours make it more appetizing than plain milk, especially to children. Flavoured milk is often pasterized using high temperature treatment. Pre-mixed flavoured milk is sold in the refrigerated dairy case alongside other milk products including include sour cream, yogurt, cheese, buttermilk, viili, kefir and kumis. Flavoured milk is very popular in Australia. Bottled spiced masala milk is a popular beverage in the Indian subcontinent. 71% percent of the milk served in US school cafeterias is flavoured, causing some school districts to propose a ban because flavoured milk has added sugars. Milk is considered as an agricultural product, and is obtained from many animals including goat, buffalo, cow are high in minerals and unique compounds that can help build strong bones and improve immunity. The composition of milk differs widely among species. For example: Human milk contains, on average, 1.1% protein, 4.2% fat, 7.0% lactose (a sugar), and supplies 72 kcal of energy per 100 grams. Cow's milk contains, on average, 3.4% protein, 3.6% fat, and 4.6% lactose, 0.7% minerals and supplies 66 kcal of energy per 100 grams. Donkey and horse milk have the lowest fat content, while the milk of seals and whales may contain more than 50% fat. Processed cow's milk contain differing amounts of fat. One cup (250 mL) of 2%-fat cow's milk contains 285 mg of calcium, which represents 22% to 29% of the daily recommend intake (DRI) of calcium for an adult. Depending on its age, milk contains 8 grams of protein, and a number of other nutrients (either naturally or through fortification). India is the world's largest producer and consumer of milk. China and Russia are the world's largest importers of milk and milk products. Throughout the world, there are more than 6 billion consumers of milk and milk products and over 750 million people live within dairy farming households.

ix. Punch

Punch is the term used for a wide variety of drinks, including both alcoholic and non-alcoholic, that contain fruit or fruit juice. The drink is expected to be of a lower alcohol content than a typical cocktail. The term punch was first recorded in British documents in 1632 where, it was introduced to England from India in the early seventeenth century. Today, soft drink manufacturers market several types of red colored "fruit punch" beverages. They contain only a small fraction of actual fruit juice, the major constituents being sugar or corn syrup, citric acid, and artificial flavors. Non-alcoholic varieties, typically include a mixture of water, some fruit juice, and a sweetener like sugar.

x. Carbonated drinks

Carbonated drinks refer to drinks which have carbon dioxide dissolved into them through process of natural fermentation or artificially by the dissolution of carbon dioxide under pressure. Carbonated beverages are liked by all. Sodas are packed with sugar and sugar substitutes. There are no real health benefits to soda, except for their caffeine boost that it provide. Cola, orange, various roots, ginger, and lemon/lime are commonly used to create non-alcoholic carbonated drinks with addition of sugars and preservatives. The most consumed carbonated soft drinks are produced by three major global brands: Coca-Cola and PepsiCo.

x. Other than these several other drinks are popular in the global market some of them are: Acceleradeis, a non-carbonated sports drink made by Pacific Health Laboratories, is one of few sports drinks used to speed up recover hydration rates. A 4:1 ratio of carbohydrates to proteins is contained in the drink. Bonjus, French for good juice, is line of beverages produced in Lebanon.

A spritzer is a chilled drink, made with white wine and seltzer, soda or sparkling mineral water. In Germany, carbonated drink made with juice and carbonated mineral water) is popular as Saftschorle or Fruchtschorle. Particularly Apfelschorle (apple juice spritzer) is one of the most popular soft drinks in Germany.

Claytonsis is the brand name of a non-alcoholic, non-carbonated beverage colored and packaged to resemble wine.

Coolattais is a frozen drink made either as a frozen coffee beverage, with coffee and cream, or as a slush, made with fruit juice. The flavour type vary according to manufacturer that include French Vanilla, Caramel, Mocha, and Hazelnut, Strawberry, Tropicana Orange, Grape, Watermelon, Cherry, and Blue Raspberry, vanilla. Mixtures of different flavours and whipped cream are possible upon request. In July 2012, Dunkin Donuts introduced two new flavours to their coolatta collection - an Oreo flavoured vanilla bean and an Oreo flavoured coffee coolatta. Envigawas is a Nestea carbonated canned green-tea drink. Coca-Cola Company and Nestlé. It is available in three flavors: Green tea, Tropical Pomegranate and Mixed Berry. It is sweetened with aspartame and has no carbohydrates, fat, or protein. According to Coca-Cola, Enviga burns 60 to 100 calories per three 12-oz (330 ml) cans due to its high EGCG and caffeine content but is denied by others.

Frosteris a brand of iced frozen carbonated beverage sold at Mac's Convenience Stores in Canada and Circle K in the United States.

Hoppy is an almost non- alcoholic drink (0.8% alcohol) beer-flavoured drink marketed by Kokuka Beverage Company. Despite its beer-like flavor, Hoppy contains no purine bases. Hoppy mixed with shōchū (a Japanese distilled beverage) is considered as a substitute for beer. The mixed drink

is referred to as Hoppy and is a popular drink in Japanese pubs, especially within the suburban old town area along the Keisei Main Line.

Kool-Aidis a brand of flavoured drink mix owned by Kraft Foods. It is available in original six flavors cherry, grape, lemon-lime, orange, raspberry, and strawberry.

Red Bullis an energy drink created by Austrian company Red Bull GmbH in 1987. In terms of market share,

PREPARATION OF NON-ALCOHOLIC BEVERAGES

General basic methods for preparation of non-alcoholic beverages:

- Blending (mixing of components)
- Juicing
- Mixing
- Plunging
- Shaking

This can include a number of different steps, some prior to transport, others immediately prior to consumption

I. Collection of water

Water is the chief constituent in all drinks. Purified water is recommended by the World Health Organization, for use in manufacturing process.

II. Collection of extracts

Various methods are used for extracting juice from fruits and vegetables. Simple crushing of most fruits will provide a significant amount of liquid, though a more intense pressure can be applied to get the maximum amount of juice from the fruit. Both crushing and pressing are processes used in the production of wine.

Infusion

Infusion is the process of extracting flavours from plant material by allowing the material to remain suspended within water. This process is used in the production of teas, herbal teas and can be used to prepare coffee (when using a coffee press).

Percolation

The name is derived from the word "percolate" which means to cause (a solvent) to pass through a permeable substance especially for extracting a soluble constituent. In the case of coffee-brewing the solvent is water to allow permeation of soluble constituents of coffee seeds into water to give coffee its colour, taste, aroma, and stimulating properties.

III. Pasteurisation

Pasteurization is the process of heating a liquid for a period of time at a specified temperature, then immediately cooling. The process reduces the growth of micro-organisms within the liquid, thereby increasing the time before spoilage. It is primarily used on milk, which prior to pasteurization is commonly infected with pathogenic bacteria and therefore the more likely than any other part of the common diet in the developed world to cause illness. Other methods like preparation, packaging and sealing are done under aseptic conditions, ultraviolet light (UV) treatment are other methods of sterilization to keep the product safe and microbes free.

IV. Carbonation

Carbonation is the process of dissolving CO_2 into a liquid, such as water.

V. Fermentation

Fermentation is a major step in the preparation of wine, beer and other alcoholic beverages. The process converts sugar to ethanol with or without addition of yeast in an anaerobic environment. The amount of sugar in the wine and the length of time given for fermentation determine the alcohol level and sweetness.

VI. Distillation

Distillation is a method of separating mixtures based on differences in vapour pressure of components in a boiling mixture. It is also a method of producing spirits from milder alcoholic drinks.

VII. Mixing

An alcoholic drink that contains two or more ingredients is referred to as a cocktail. A cocktail usually contains one or more kinds of spirit and one or more mixers, such as soda or fruit juice with or without addition of sugars, honey, milk, cream, and various herbs.

ALCOHOLIC BEVERAGES

Alcoholic beverage is used as a generic term for beverages that contain more than 2.5% alcohol by volume, nevertheless such that the minimum age provision applies to beverages containing between 0.70 and 2.50 per cent alcohol by volume.

As per Indiana law, the term alcoholic beverage means a liquid or solid that:

- Is, or contains, one-half percent (0.5%) or more alcohol by volume
- Is fit for human consumption
- Is reasonably likely, or intended, to be used as a beverage. (IC 7.1-1-3-5)

Alcohol beverages can be classified into five product categories: beer, wine, spirits, cider, and ready-to-drink (RTD) pre-mixes. RTD pre-mixes have the least percent of alcohol, in terms of volume, than all other alcoholic drinks. In terms of volume, the consumption of beer is the highest among all other alcoholic drinks. Alcohol in these beverages are generated in situ through anaerobic microbial fermentation of plant-derived carbohydrate materials by yeasts. Fermentation is initiated by the introduction of yeast into base material such as Grapes, Grains, Barley, Fruits, Sugarcane and Rice (Table 1). During the process, yeast converts available sugar into ethyl alcohol and carbon dioxide (CO_2). A very small amount of methanol is also produced during natural fermentation that is highly toxic and used as spirits and cleansing agents.

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

FDA approves only alcohol, obtained from a fermented beverage as safe to drink. Liquids which are unsuited as in toxicants because of denaturation or for other reasons, shall not be regarded as alcoholic beverages pursuant to this Act. Nor shall liquids to which alcohol has been added only in an amount necessary to keep them in solution or to impart keeping qualities. The termed proofed spirit was first used as a yard stick in collecting the taxes on alcoholic beverages.

Manufacturing of alcoholic beverages is strictly controlled by central regulatory bodies.

Some examples of alcoholic beverages include Wine, Champagne, Beer, Whiskey, Brandy, Aperitif, Spirits, Sake, and Cocktails. Alcohol content in these portable liquids may vary from 1% to 75%. Wine and beer can be distilled further to produce spirits with high alcohol content of 30-50 percent by volume.

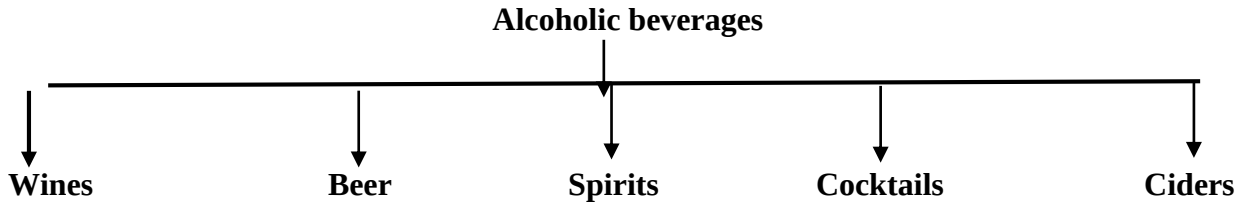
Table 1: List of substrates for various beverages

Substrate	Fermented beverage	Distilled beverage
Grains		
Wheat	Wheat beer	Vodka, soju
Barley	Beer, Barley wine	Whiskey
Corn	Corn beer	Bournbon whisky
Rye	Rye beer	Vodka (Russia)
Rice	Beer, choujiu (China), sake (Japan), sonti (India), makgeolli and chungju (Korea)	
Fruits and vegetables		
Grapes	Brandy	brandy, cognac, pisco, rakia, arak
Apples	Cider	Cider
Cashew		Feni
Coconut	Toody	Lambanong
Pear	Peer	Pear brandy
Raspberries	Raspberry	Himbeergeist
Pomace	Pomace	Raki/ouzo/pastis/sambuca, tsipouro/tsikoudia, marc, orujo, zivania, bagaço, arak

Potato	Potato beer	Horilka, vodka, akvavit, poitín
Sugar cane	Basi	Rum/rhum, cachaça, desi daru, mamajuana, cocoroco
Sweet potato		Soju

Classification of alcoholic beverages

Depending upon method of processing and type of fermentable material, alcoholic beverages may be classified as:



Wines	Beer	Spirits	Cocktails
- Table	- Lager	- Whisky	- Shaken
- Sparkling	- Ales	- Brandy	- Stirred
- Fortified		- Rum	- Built up
- Aromatic		- Vodka	
- Mead			

General method of preparation of an alcoholic beverages include fermentation and distillation.

a. Fermentation

Fermentation is the biochemical process in which sugar is converted to alcohol and carbon dioxide by yeast. This process is the basis for producing all types of alcoholic beverages. Examples of fermentation drinks are wine, beer and cider. Three basic components of fermentation to take place are microbial yeast, sugar and optimum temperature.

b. Distillation

Distillation is a process of simultaneous evaporation and condensation of liquid or mixture of liquids to purify them.

Wines

Wines are alcoholic beverages that have been fermented from fleshy fruits (e.g., apples, grapes, peaches, and plums) and vegetative parts of certain plants. The vast majority of wines are made from grapes (*Vitis vinifera*, family: vitaceae). Wine is made in a variety of colors, flavors, with varying degrees of sweetness and alcoholic strength, ranging from 10 percent to 14 percent. Wine comes in two primary varieties, red and white. Depending on variety of grapes, soil content and cultivation process, the flavors and unique nutrient profile will be different**.** For example grapes

wine contain high levels of tannins, antioxidants and phytochemicals derived from the skin of the fermented fruits. This can make wine, in moderation, very helpful for lowering your risk of chronic disease, cancer, chronic stress hormones and other unsavory medical conditions.

CLASSIFICATION OF WINES

Wine can be broadly categorized into five types:

1. Table wines/still wines

These include Red, white and rose wines, which normally accompany a meal. The alcoholic content generally low when compare with others (beetween 10 to 12 %.) but some German Table wines may have 8-10% alcohol. Generally, red meat (like beef, pork and lamb) are served with red wines, and white meat (such as Chicken or fish) with white wines.

Examples: Bordeaux wine, Burgundy wine and Tokay etc.

2. Aromatic wine

These wines contain aromatic herbal substances in addition in addition to other ingredient. The most important of these aromatic wines are Vermouth, which is made from natural white wines of 2-3 years old that are blended with an extraction of wormwood, vanilla & various other herbs and spices they contain fruits, plants, and flowers.

Example: Vermouth

3. Sparkling wine

These wines with a bubbly and sparkling character. This is so because of the carbon-dioxide trapped in them and it makes fizzy, which gives an effervescence when poured in a glass. Alcoholic content is less that 14% these wines are drunk on festive occasions and throughout a meal.

Example: champagne and other "bubbly" wines

4. Fortified wines

These are the table wines with brandy or other alcohol added either during or after fermentation which increases the alcoholic content from 18% to 22%. These wines are drunk either before or after a meal.

Examples: sherry, port, madeira and marsala.

5. Mead

Such wines contain honey as the primary ingredient after water, mead.

WINEMAKING

The science of wine and winemaking is known as oenology. Based on type of requirement of end product, method of winemaking can be divided into two categories with difference of allowing an additional secondary fermentation for carbonating the general still wine.

a. Still wine production (without carbonation)

b. Sparkling Wine Production (with carbonation — natural or injected)

To prepare wine from grapes or any substrate, fermentation is completed in two steps:

1. Primary fermentation
2. Secondary fermentation also known as aging or conditioning the wine

Wines are made by harvesting ripened grapes from vineyards. The timing of the harvest is critical, since a balance of accumulated sugar, acids, and other grape flavour components reach an optimal level to ultimately produce a fine wine. Due to variation in seasonal climates, growing and harvest conditions, and seasonal timing of production events, significant changes occur from year to year that make wines produced in certain years of higher or lower quality. If the grapes are harvested too soon or too late, there is the possibility of producing a lower quality wine.[5] After harvesting, grapes are taken into winery and prepared for primary ferment. Harvested fruits are first passed through a mechanical destemmer to remove extraneous material and then pressed to express the juice from the fleshy berries. The liquid obtained from the crushed grapes is termed "must." To start primary fermentation, must is placed in either open or closed fermentation vessels (typically closed vessels in modern wineries) and generally inoculated with yeast (mainly *Saccharomyces cerevisiae*) to initiate fermentation.[6] Different varieties of the yeast *species including S. cerevisiae* (Beer and fruit wine), *Saccharomyces carlsbergensis* (lager), *and Saccharomyces sake* (rice wine) can used to produce wines. A particular strain of yeast (listed in table) contribute a flavor to wine during fermentation. The resistance of *S. cerevisiae* to its metabolic products, especially ethanol, makes it a dominant organism above microbes in fermentations. Some non-*Saccharomyces* yeasts found in wine are capable of producing different amounts of alcohol – namely *Torulaspora delbrueckii, Saccharomycodes ludwigii* (moderate to high), *C. stellata* (low to moderate), and the apiculate yeasts at low levels – with production limits a likely indication of ethanol tolerance.[7] Addition of fungal catalyst is optional as ambient yeast may occur naturally during fermentation.

Process of manufacturing of wines red and white wine differ at the stage of primary fermentation. At this stage, color of grape skins determine the color of the wine. Red wine is made from the pulp (must) of red or black grapes where the juice extracted from red grapes is allowed to ferment along with dark skins of fruits to impart red anthocyanin pigments to the finished wine during maceration or saignée.

White wine is made by fermenting juice collected after pressing the crushed grapes; the skins are removed and has no role to play. Occasionally white wine is made from red grapes; this is done by extracting their juice with minimal contact with the grapes' skins. White and rosé wines extract little of the tannins contained in the skins.

Secondary fermentation and aging process, is a slow process and may take three to six months or more. Depending on the aim of manufacturer, large stainless steel or oak barrels are used during as fermentation vessels during aging process. The wine is kept under an airlock to protect the wine from oxidation. Conditioning the wine in oak barrels imparts oak aromas and some tannin to the wine. Fermentation is stopped at a stage when alcohol released in situ reaches to approximately 12 to 14 percent by volume. Following primary fermentation, any suspended particulate material (so called lees) is allowed to settle and the clear free run wine is siphoned in storage tanks made up of either stainless steel or oak barrels. Marc is pressed to extract the remaining juice and blended with the free run wine at the winemaker's discretion. The pooled wine is kept under an airlock to protect the wine from oxidation. During this secondary fermentation or aging process, oak barrels imparts a peculiar aromas and texture to the wine. Even contact with tannins in the walls of the barrel provides subtle and desirable flavor characteristics that are absent from wines conditioned in stainless steel vessels. The conditioning of wine is a slow process and may take a year or more depending on the goals of the manufacturer.

For making red wine from apples, "crisp, green apple" malic acid is allowed to convert to lactic acid with the help pf bacteria. This process is called malo-lactic conversion and used to improve the taste of wine.

Most wines are not carbonated (still), but some wines, known as sparkling wines, are allowed to undergo additional secondary fermentation after packaging thereby releasing carbon dioxide inside the container. In these alcoholic drinks, carbon dioxide produced during fermentation is allowed to dissolve in wine that produces the characteristic bubbles. Carbonated sparkling wines are widely popular in Australia and other developed countries.[8] Champagne is one popular example of such wines (white) and was primarily originated in France.

An another category of wine, called sweet wine or off-dry wine is made by arresting fermentation before all sugar has been converted into ethanol. This can be done by filtering off the wine when the desired sugar level has been reached or adding sulfur dioxide or other allowable additives to remove/inhibit all the yeast activity. In the case of sweet wines, initial sugar concentrations could be increased by using late harvested or dried grapes. High concentration of sugar and rising concentration of ethanol impede the fermentation by inhibiting yeast activity. Sometimes, high

proof neutral grape spirit (brandy) may be added to arrest the ongoing fermentation and adjust the alcohol content. Sulfur dioxide (SO_2) is added in the form of liquid sulfur dioxide, sodium or potassium metabisulphite or potassium sorbate are the most common preservatives used in wine.

Wines are bottled in glass containers and are usually sealed by inserting a compressed cork into the neck of the bottles. While storing wine, containers are rested on the side, so that the cork remains moist to maintain its airtight seal. Some wines should be consumed within a year or two of production; others need many years or decades to achieve their optimum flavor.

The wine industry is an extensive one, with major centers of production in France, California, Italy, and Germany, South Africa, Australia, and Chile. Although wine is prepared around the world, certain places are favoured for wine production due to optimal climates and suitable land for the establishment of vineyards.

Beer

Beer is one of the oldest alcoholic beverages on the planet, originated in Middle East. These are generally called fermented malt beverages. Beer is prepared by fermenting carbohydrate enriched extracts of some cereal grains, maize, etc. with addition of yeast. Nutrient profiles of beer depends upon process of brewing used while manufacturing, but primarily they contain carbohydrates and small amounts of protein.

1. Lager

Lager beer is distinguished by the fact that the wort is the fermented by a bottom fermentation type of yeast (i.e., yeast which is introduced at the bottom of the fermenting tanks) and then is stored in refrigerated cellars (lager) at freezing point for a period of six months. The process matures the beer. Lager is a german word meaning ‘store’. Pilsener lager is the limestone caves of pilsen in Czechoslovakia.

2. Ale

Ale is a term used for ordinary mild beer while better beer is referred to as “beer”.

3. Porter

Porter is a black beer obtained by roasting malt. It is more malty in flavour, with less flavouring of hops, but sweeter then stout.

4. Stout

Stout differ porter in its stronger malt and hop characteristic flavor. This wine is sweeter and heavier than other wines.

5. Draught beer

The name is given to beer with **f**reshly dissolved gases in it.

Beer production: Preparation of beer is multistep process that starts with collection of base material.

Preparation of malt

Beer is mainly prepared from malt of barley (*Hordeum vulgare*). Viable barley grains are soaked in water and allowed to germinate under controlled ambient conditions. During germination process enzymes are produced that convert the complex carbohydrates (starch) of the endosperm into soluble sugars. At a specific germination stage where, enzyme concentration reaches to its maximum optimal level the fermentation is stopped by rapid drying of substrate. The process is called kilning and dried grains are called malt and cleared from extraneous matter. The degree of kilning determines the colour of the resulting beer. Malt can also be procured from professional suppliers.

Preparation of sweet wort

The malt is coarsely crushed to expose the embryo and endosperm components. The ground malt (known as grist) is mashed in a mashing tun where it is mixed with water and heated to a temperature of approximately 65°C to reactivate the enzymes amylases. The ground malt (grist) is mashed with water and heated to a temperature of approximately 65°C to reactivate the enzymes amylases. After fermentation to a specific stage the liquid from mixture is siphoned (sparging) to a boiling vessel. The clear liquid so obtained is called sweet wort.

Sweet wort is boiled for 1 - 2 hours, with resinous, cone-like inflorescences of the hop plant (*Humulus lupulus;* family Cannabinaceae) to provide flavouring, aromatic, and bittering characteristics to the beer. The unused hops are strained off into the hop back for future fermentation while spent hops are used as fertilizers.

Fermentation

Sweet wort is rapidly cooled and passed on to an open or closed fermentation vessel. Two main strains of yeast are used for fermentation namely, *S. cerevisiae* and *S. uvarum* fermented beers are further conditioned to improve flavor and texture. The alcohol content of the majority of beers is generally around 5 to 14 percent by volume but can be higher in certain cases.

Collection

The fermented wort, a crude form of beer, is siphoned into a dropping vessel and spent yeast is used as cattle fodder; while unused yeast is removed for use in future fermentation.

Conditioning

The process is also called casking where crude beer is transported into casks or metal cans or traditionally in oaken barrels (kegs) which are stored in underground cellars at low temperature (13-15°C). At this stage, finings are added to clarify the clear beer. Beer is usually flavoured with bittering substances to balance the sweet flavor of unfermented sugars, which are typically found in beer.

Packaging

Prepared beer is filtered and are packaged in bottles.

Carbonating

Beers are naturally carbonated by continued slow fermentation after they are bottled, or they are artificially carbonated prior to bottling.

Nutritional composition of Beer:

- Water: 89-91% by weight.
- Alcohol: 3-5% by weight (rare cases 10-12%).
- Carbohydrates, sugar or dextrin: 3-4% by weight.
- Protein: 0.4-0.5% by weight.
- Carbon dioxide gas: 0.4-0.5% by weight.
- Minerals, salts: 0.2% by weight.

Spirits

Beverages produced from plant products that have been fermented and then distilled are called spirits. "Spirits" contains manufactured alcohol unblended or blended with other products. All beverages containing 22% or more alcohol by volume are regarded as spirits.

The distillation process increases alcohol content (14 to 16 percent) of fermented materials, to 40 to 75 percent by vapourizing the alcohol and many flavour components and then condensing them in specialized equipment known as stills. The condensate coming from the distillation process is the concentrated alcoholic beverages so called spirits or liquor. Whiskeys (including Scotch or single-malt whiskey), bourbon, gin, vodka, rum, tequila, brandy, and various other liquors are produced through the distillation process. Use of different starting material for preparation of distilled beverage imparts specific flavour characteristics to the finished product. Quality of spirits is measured in terms of its alcohol content, described as having a certain proof, or twice the measured alcohol content (for example, 86 proof whiskey has an alcohol content of 43 percent). Hard liquor is used in North America and India to distinguish them from weaker undistilled ones.

Distilled liquors are prepared generally by two methods:

Pot still method

This is the old traditional method. Here, fermented material is distilled to increase alcohol content. Spirits produced by this method possess characteristically distinct flavour but the method is costly and laborious.

Column still method

In this method, alcohol is separated from the previously fermented matter by hot steam and the end product is 'congener-free'. The method is fast and produces end product with high alcohol content.

Whisky

Whisky is a spirit that is produced in an extended process consisting of distillation of fermented grains, particularly barley malt, ageing and dilution. Distillation increases alcohol content to 70% alcohol by volume but during the maturation alcohol evaporates resulting in an alcohol content of 55–65 vol-% of cask-strength whisky. Before bottling, the whisky is diluted to around 40 vol-% by the addition of water. Period of aging determines the quality of whisky. e.g., Regular scotch whiskies are for 3-12 years, premium scotch or Deluxe premium scotch are matured for 12-20 years and the finest old 'Blue label' for a minimum of 20 years. Some whiskies, from Scottish island of Isley, have a typical smoky taste that develops when malted barley is smoked on peat fire.[9]

Brandy

Brandy is a pure uncoloured alcoholic product obtained by distillation of fermented grape juice. They are aged in oakwood casks for a minimum of 3 years which impart amber colour to it. brandies are categorized on the basis of period of their maturation.

i. One star - Matured for two years
ii. Two stars - Matured for two to four years
iii. Three stars - Matured for five to eight years
iv. V.O. – Very old
v. V.O.P – Very old pale
vi. V.S.O. – Very superior old
vii. V.S.O.P. – Very Superior old pale
viii. V.V.S.O.P. - Very superior old pale

Rum

The word 'rum' is derived from latin term saccharum, which means 'sweetness'. Rum is made from sugar cane products such as molasses, sugarcane juice, or sugarcane syrup. The rums

produced from molasses are called industrial rums and those produced from pure cane juice are called rums agricole. The rum was first produced in the seventeenth century in Barbados.

Gin

Gin is a spirit flavoured with berries of juniper (*Juniperus communis*). Distilled gin is obtained by original distillation of mash or by the reinstallation of distilled spirits, with berries of juniper (*Juniperus communis*) and other plants, The drink consists of 75% corn, 15% barley malt and 10% other grains. There are several kinds of gin. e.g., London dry" is the most commonly used.

Vodka

Vodka is a distilled beverage composed primarily of water and ethanol. Traditionally, vodka is made by the distillation of cereal grain or potatoes that have been fermented, though some modern brands use other substances, such as fruits or sugar. Vodka is traditionally drunk neat. The European Union has established a minimum of 37.5% ABV for any "European vodka.

Proof spirit

It is a measure of the ethanol (alcohol) content in an alcoholic beverage. The term *proof* dates back to 16th century England, and was labelled as alcohol by volume (ABV). Historically, spirits were tested by soaking a pellet of gunpowder in them. If the gunpowder burnt, the spirits were rated above proof and taxed at a higher rate. European countries: The European union follows recommendations of the International Organisation of Metrology (OML). OIML's International Recommendation No. 22 provides standards for measuring alcohol strength by volume and by mass.

United Kingdom: United Kingdom has used the ABV standard to measure alcohol content, as prescribed by the European Union.

United States: Alcohol proof in the United States is defined as twice the percentage of alcohol by volume. 100-proof whiskey contains 50% alcohol by volume; 86-proof whiskey contains 43% alcohol. For example, 50% ABV would be described as "100 proof" rather than "100 degrees proof".

Cider

Cider is a fermented alcoholic drink made from fruit juice, most commonly and traditionally apple juice, but also the juice of peaches, pears ("Perry" cider) or other fruit. Cider may be made from any variety of apple, but certain cultivars grown solely for use in cider are known as cider apples. The United Kingdom has the highest per capita consumption of cider, as well as the largest cider-producing companies in the world. As of 2006, the U.K. produces 600 million liters of cider each year (130 million imperial gallons).

NUTRITIONAL SIGNIFICANCE

A functional beverage is a drink typically intended to convey a health benefit. Some include ingredients like herbs, vitamins, minerals, amino acids, or additional raw fruit or vegetables e.g., sports and performance drinks, energy drinks, ready to drink (RTD) teas, enhanced fruit drinks, soy beverages, and enhanced water. Highly caffeinated energy drinks have become popular on the beverage market in the United States, as well as globally, in the past decade.[10] Various stimulants found in energy drinks include taurine, glucoronolactone, caffeine, vitamin B, ginseng, *ginkgo biloba*, L- carnitine, sugars, antioxidants, Yerba mate, creatine, milk thistle.

Functional beverage industry players are generally categorized into four types:

1. Traditional non-alcoholic beverage companies, like PepsiCo, and Coca cola.
2. Major food companies, such as Nestle, Altria, Kraft Foods
3. Smaller-scaled private companies, like SALOMED GmbH in Austria, and specialized companies like Traditional Medicinal.

Most beverages contain a great deal of water. This does not add many nutrients to the diet, but it does play an important role in maintaining body balance by preventing dehydration. Beverages are not usually consumed for their food value, but many, particularly the fruit drinks, contain quite a high percentage of sugar, vitamins and minerals, and, therefore, add to the energy content of the diet. Based on energy requirement of a healthy person The Beverage Guidance Panel divides quantity of beverage intake into a six-level pyramid. [11]

Most alcoholic beverages contain little or no fat or sodium. Protein levels are also low generally less than 2 grams with trace amounts of sodium. Wine and hard liquor contain no traces of protein, fat or sodium at all. Mixed drinks vary, but generally have low levels of sodium, protein and fat, with exception, of salt-rimmed margarita containing significant amount of sodium that imparts its creamy texture partly from coconut oil. 1.5 ounce (one shot) of hard liquor contains approximately 100 to 200 calories of energy. Beer and wine average around 150 calories per serving.[12, 13] Table 2 below compares carbohydrates, fats proteins contents of some beverages.

Table 2: Energy content per serving of different beverages

Beverage	Calories	Carbohydrates	Fats	Sugar
Prune juice	182	44.67	0.777	42.11
Carbonated regular cola	155	39.77	0.000	36.78
Grape juice (unsweetened)	155	37.84	.202	35.93
Apricot juice	140	36.11	.226	30.15
Lemonade	131	34.05	.149	24.65
Tangerine juice (unsweetened)	125	29.88	. 098	21.17

Milk (2% fat)	122	28.96	4.807	12.35
Apple juice (unsweetened)	117	26.84	.273	32.67
Orange juice (unsweetened)	112	22.13	.149	21.81
Grapefruit juice (unsweetened)	94	11.41	0.247	17.78
Tomato juice	41	10.30	.122	7.09
Beer/wine	150		0.000	
Distilled wine	100-200		0.000	

STORAGE OF WINES

Storage is an important task for wine that is being kept for long-term aging. Wine is one of the few commodities that can improve with age but it can also rapidly weaken if kept in poor conditions. Light, humidity and temperature are main factors affecting fermentation. Strong, direct sunlight light can badly react on wine so keep it in the dark store. UV rays can cause wine to be 'light struck,' giving them an unpleasant smell. Darker bottles (such as light green and blue coloured) are better protected. Some degree of humidity is required in order to keep wines with cork enclosures from drying out. Loose capping can allow oxygen to enter the bottle and possibly causing the wine to spoil or oxidize. Constant temperature is one of the important factor for extended aging of wine (over 1 year), refrigeration is a must in most parts of the world; even a below-ground cellar is not cool enough. Wine storage temperature should not go over 75UF (under proof) (24°C), for longer than brief spans of time. At 75°F, wine begins to oxidize. An ideal temperature for storing a varied wine collection is 54°F (12.2°C).[14]

LEGAL REQUIREMENT

Alcohol is legally allowed in countries of the world where a drinking culture exists. In countries where alcohol is illegal, Alcoholic beverages may only be manufacture, used, sold, served or produced on the basis of a license granted under the country's own Act, described as Alcohol law in legislation. However, tolerance limit most beverages advertised as "alcoholic" or non-alcoholic liquids" vary such as, Finland has a quite high ABV regulation for non-alcoholic beverages that are classified as alcoholic beverage by most other countries.

Alcoholic beverages fall under a different jurisdiction than other consumables in many countries, with highly specific regulations and licensing on alcohol content, methods of production, and retail and restaurant sales. Alcohol tax is an excise tax. The U.S. government collected 5.8 billion in 2009. In history, the Whiskey Rebellion was caused by the introduction of an alcohol tax to fund the newly formed U.S. federal government.

In most countries, the commercial production of alcoholic drinks require a license from the government, allowed to produce in the home for personal use without a license or tax.

Generally, alcoholic beverages containing 22 percent or more alcohol by volume must not be retailed, served or supplied to anyone under the age of 20. Alcoholic beverages containing less than 22 per cent alcohol by volume must not be retailed, served or supplied to anyone under the age of 18.

Most countries also prescribe a legal minimum age which prohibits the purchase of alcohol by minors. Most European countries have a minimum purchase age of 18 years, while a few remain with a purchase age of 16 years. United States customs laws specify that no person under the age of 21 may bring any type or quantity of alcohol into the country. Persons who retail or serve alcoholic beverages containing 22% or more alcohol by volume must be 20 years of age or more, and persons who retail or serve other alcoholic beverages must be 18 years of age or more.

Drinking alcohol in public places, such as streets and parks, is against the law in most of the United States, though there is no specific federal law that forbids consumption of alcohol in public. Public drinking is allowed in Asia with the exception of Singapore, where a law was passed in 2015 banning the consumption of liquor in public from 10:30 pm to 7am. Whereas, in Chile, Brazil and United States, there is no strict federal law against public drinking.

Most countries have drunk driving laws which limit how much alcohol a person can consume before driving a car on a road. The permitted blood alcohol content threshold ranges from 0.0% to 0.08%.

In the European Union, the labels of beverages containing only more than 1.2% ABV must state the actual alcoholic strength (i.e., show the word "alcohol" or the abbreviation "alc." followed by the symbol “%vol.”).[15]

The requirements for standard drink labelling apply to beverages or food capable of being consumed as a beverage, where the alcohol by volume is more than 0.5%. A ‘standard drink’ is the amount of a beverage that contains ten grams of alcohol at 20 degrees Celsius.

- An alcoholic beverage containing more than 1.15% alcohol by volume must not be represented as a low alcohol beverage.
- The label on a package of a beverage containing more than 0.5% alcohol by volume must not include the words ‘non-intoxicating’ or words of similar meaning.
- Alcoholic beverages must not be represented in a form which expressly or by implication suggests that the beverage is non-alcoholic.

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