Functional Beverages

BY

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Main Points

- Why Functional Beverages (F.B.)
- (F.B.) History
- Meaning of (F.B.)
- Consumer choices changes about (F.B.)
- Benefits of (F.B.)
- (F.B.) Industry, market, ingredients, product trend and applications
- (F.B.) from region to region
- Examples of (F.B.)
- Explaining Antioxidant (Short Film)
- Explaining Nutraceuticals
- Explaining different between prebiotic and probiotic
As you might know, our body consists of 100 trillion cells these cells need 114 various nutrients & water during the day.

Your body need 114 nutrients everyday, if it cant get it from your diet,
Although water makes up 60 percent of your total body weight and most nutrition experts recommend drinking six to eight glasses of water per day, many people find staying adequately hydrated to be a challenging task.

In recent times, there has been growing recognition of the key role of foods and beverages in disease prevention and treatment. Thus, the production and consumption of functional foods and beverages has gained much importance as they provide a health benefit beyond the basic nutritional functions.
Introduction

Why Functional Beverages??

- At present, **beverages** are the most active functional food category because of convenience and possibility to meet consumer demands for container contents, size, shape, and appearance, as well as ease of distribution and storage for refrigerated and shelf-stable products.
- Moreover, they are an excellent delivering means for nutrients and bioactive compounds including vitamins, minerals, antioxidants, fatty acids, plant extracts, and fiber, prebiotics, and probiotics.
History

Over the last decade, demand for “healthy” foods and beverages has increased in many parts of the world (Ozen and others 2012). The idea of health-promoting foods is not new: Hippocrates wrote 2400 years ago “Let food be thy medicine and medicine be thy food” (Otles and Cagindi 2012). Nowadays, the advances in scientific research support the idea that diet and beverages may fulfill nutritional needs and exert a beneficial role in some diseases (Otles and Cagindi 2012).

“Let Food be thy Medicine”

The Philosophy behind Functional foods and beverages is:

“Focus on Prevention”
A **functional beverage** is a drink product that is non-alcoholic and includes in its formulation ingredients such as herbs, vitamins, minerals, amino acids or additional raw fruit or vegetables.
Consumers have more beverage choices than before, beverages raised and have become many kinds and so specific and representing an extension of one’s personality. Consumers have their choice of beverages that are:

- boosting energy,
- shrinking waistlines,
- sharpening mental focus,
- preventing pain associated with bone and joint conditions, and the list goes on.

In addition, there are beverages that are specific for each age demographic and gender, with a growing focus on products targeting kids, women and seniors. This diversification fuel consumer demand.
Consumers Have More Beverage Choices Than Ever Before

Clear Segments

- Nutrition
- Relax
- Perk Up
- Social Reward
- Cheap for Kids
- Treat, Fun
- Breakfast
- Powdered Drinks
- INSTANT COFFEE
- BEER
- JUICE
- MILK
- CSD

Now - Many New "Categories" and Further Segmenting

- CSD
- Regular
- Light
- Imported
- Beer
- Milk
- 2%
- Skin
- Juice Drinks
- Energy Drinks
- Sports Drinks
- Flavored Milk
- Flavored Water
- Alcoholic Beverages
- Still Water
- Sparkling Water
- Fruity Water
- Juice
- Water
Functional drinks are promoted with benefits such as:

- Heart health,
- **Improved** immunity and digestion,
- Joint health,
- satiety,
- Energy-boosting.
The functional Beverages Industry

• **Functional beverage** sector is a subsector of the *functional food* and non-alcoholic beverage industry and it is the fastest growing sector. This rapid growth is partially due to the combination of maturity of the carbonated *soft drink* sector and heavy investments by major food and beverage companies. In 2006, the functional beverage per capita consumption have risen to 66.4 gallons, while the carbonated soft drink sector has a decline in their per capita consumption to 50.4 gallons.
The functional beverage market

• The functional beverage market has steadily increased over the past decade, with a sharper rise in the last couple of years. According to Datamonitor, the global non-alcoholic beverage market is valued at just under $500 billion worldwide, with Europe accounting for the largest portion at $189 billion. China has become the fastest growing country at an overall growth rate of 77% over the past decade.
• Beverages still remain as the ultimate grab-and-go product, but now consumers can combine hydration with performance or even as a preventative measure for specific health conditions. Beverages are beginning to incorporate a more expansive line of functional ingredients such as nutraceuticals, zero-calorie sweeteners and flavors that not only taste good but are good for you. There is such a wide array of functional ingredients on the market today making beverage innovation much easier. Functional ingredients include nutrients (vitamins, minerals, amino acids, nutraceuticals, etc.), flavors, sweeteners, stabilizers, and colors.
Product trends

• The functional beverage industry encompasses a wide range of varieties targeting different health related concerns. One trend for functional and sensory benefits such as thirst quenching ability with daily dosage of vitamins or other nutrients.

• Another one is probiotics, exemplified by Activia yogurt, for gut health and boosting natural defenses or immune system.

• Memory and mental sharpness has also been a focus, with Function BRAINIAC, a carambola punch Energy Drink in the Function Drinks line.

• Children's functional drinks received attention with leading brand Nestlé's Boost.
Product trends

Weight loss, health and beauty drinks, also Lastly, energy-boosting functional beverage products, such as Red Bull and 5-Hour Energy, have been well-known in the functional beverage market.
Functional beverages differ from one region to another around the world

- In every region of the world, functional beverages are an important part of the lifestyle for each culture.

- Asian countries tend to favor dairy based beverages, where

- U.S. and Europe favors more of a range of products spanning from enhanced waters to juices.

- Mexico and South America have seen rapid growth in sports drinks as well as energy beverage consumption, prevalent in different regions.
Functional Beverage Applications

• The manner in which beverages are consumed is just as interesting as what functional ingredients are in it. Today consumers have their choice of a traditional eight ounce or 12 ounce beverage, powder mix with added nutrients, a two ounce shot with a potent mixture of nutrients, and the list goes on.

Some of the top functional beverage categories and unique delivery methods are outlined below.
Examples of Functional Beverages

Examples include:
• Sports and performance drinks,
• Energy drinks,
• Ready to drink (RTD) teas,
• Dairy based beverages
• Enhanced fruit drinks (JUICE)
• Soy beverages
• Enhanced water.
Sports Drink/Recovery Drink

It is a thirst quenching beverage used in sports and related activities,

- The main function of sports drinks is to keep athletes hydrated while restoring the electrolytes, carbohydrates and other nutrients, which can be depleted from exercising. **Sports drinks are developed using essential electrolytes like sodium, potassium chloride, calcium, phosphate and magnesium, which are lost by sweating during exercise.** Amino acids are used to slow fatigue and improve muscle function while **B vitamins** are used to boost metabolism and generate energy. **Simple carbohydrates** can be used for a quick energy burst and **complex carbohydrates** can be used for sustained energy.

- Worldwide the fortified sports drink market topped nearly $18 billion in 2008 according to Euromonitor.
Energy Drink Definition

- An energy drink is a type of beverage containing stimulant drugs, chiefly caffeine, which is marketed as providing mental and physical stimulation. They may or may not be carbonated and many also contain sugar or other sweeteners, herbal extracts and amino acids.
- There are many brands and varieties of energy drinks.
- Coffee, tea and other naturally caffeinated beverages are usually not considered energy drinks. Soft drinks such as cola may contain caffeine, but are also not energy drinks.
- Most of the effects of energy drinks on cognitive performance, such as increased attention and reaction speed, are primarily due to the presence of caffeine. Energy drinks have been associated with health risks, such as cardiac and psychiatric conditions.
- Synonyms: energy shot, energy supplement
Energy beverages

- Energy beverages originated in Japan in the 1960’s to help the salaried class work long hours and then made its way to America in 1997 and is now gaining attraction in the United Kingdom, Brazil and India and all over the world. However, the energy beverage category is arguably the most personalized of any other product application – featuring energy drinks for men, women and as an expression of virtually anything associated with delivering energy.

- Based on the numbers reported by Euromonitor, the fortified energy beverage category has more than doubled over the past years, topping out at $14 billion in 2009.
Ready-To-Drink

- Teas Black, Green, Oolong tea ....are beneficial for health and wellness, the ‘natural’ platform offered by tea, accompanied by its already **perceived health status due to its polyphenol content**, is a major attraction for consumers.

- **Tea can manage health conditions ranging from weight loss to cognitive function and heart health.** And, regardless of its type, RTD teas are a convenient and desirable vehicle for fortification that can add even more health benefits to the drinks.
Fortified ready-to-drink

• The market for fortification within this product category is wide open and offers opportunities for manufacturers to develop and introduce products that one might term “Super Teas.”
• Currently being introduced into the marketplace are RTD teas that incorporate super fruit extracts such as pomegranate and mango.
Dairy Based Beverages

“Nature’s perfect food”

• Dairy Based Milk has often been called “nature’s perfect food” and dairy based beverages such as drinkable yogurts, continue to be a staple of a healthy diet in many parts of the world.

• In the West, dairy products supply over 20% of the daily requirement for calcium and also supply a significant amount of vitamins A, D, B12 and riboflavin (vitamin B2) as well as minerals such as magnesium and potassium. These ingredients are used as basic building blocks of many products fortified with vitamins and minerals.
• Dairy based beverages are an ideal delivery vehicle for fatty acids, as well as antioxidants, protein and other functional ingredients because refrigeration helps to keep these ingredients active. Dairy based yogurt beverages can be developed with omega 3 and hydrolyzed collagen ingredients which can be part of a healthy diet.
Worldwide Fortified Fruit/Vegetable Juice

• According to Euromonitor, the worldwide fortified fruit/vegetable juice market topped out at just over $10 billion in 2014.

• One key point that manufacturers should take into consideration is sugar content, which affects the juice category.

• Consumers are looking for products that specifically call out claims such as

  - ‘low sugar’ or ‘unsweetened’ or ‘no sugar added’, these can greatly influence consumer purchasing decisions.
Juice

- Juice Datamonitor reports that for the year 2009, over 4,000 juice products were launched, apple, orange and peach were the leading flavors of juices launched globally during 2009.
- Universal in its appeal, juices are perceived as healthy and as a good source of fortification and a great opportunity to add additional functional ingredients that can greatly enhance the appeal to consumers.
Soy Beverages

Soy milk is available in many supermarkets and specialty stores.

When selecting soy products, be sure to check labels to be sure that the beverage is a good source of soy protein and is low in saturated fat, cholesterol, and added sugar.
Soy beverages benefits from different researches

- Prevent Cancers
- Prevent Heart diseases
- Prevent Menopausal problems
- Good for Eye health
- Prevents Osteoporosis
- Benefits Renal Health
- Controls Diabetes
- Regulates Blood Pressure
- Improves Lipid Profile
- Choice for weight loss
Enhanced water

- The term enhanced water is generally used to refer to any type of bottled water that has added ingredients to improve its taste and/or offer additional nutritional benefits. Enhanced waters are sometimes called **fortified water or herbal water** also its any type of water that adds a functional benefit above and beyond hydration.

- Most enhanced waters are lower in calories per ounce than non-diet **soft drinks**.

- The marketing of enhanced water usually capitalizes on the healthful image of water combined with the perceived health, taste or functional benefits of one or more additional ingredients.
Nutrients in beverages

- **Antioxidants**
  - A, C, E, Zinc

- **Minerals**
  - Calcium, Iron, Magnesium, Potassium

- **Vitamins**
  - B, D, K

- **Superfruit Extracts**
  - Yumberry, Dragon Fruit, Goji, Pomegranate, Acai, Blueberry, Cranberry

- **Nutraceuticals**
  - Omega 3, CoQ10, Lycopene, Gaba, Caffeine, Fiber, Guana, Folic Acid

- **Amino Acids**
  - L-Carnitine

- **Pre/Probiotics**
  - Inulin, FOS, Lactulose, Lactobacillus, Bifidobacterium

- **Botanicals**
  - Green Tea, Aloe Vera, Ashwaganda Root, Resveratrol
Nutrients in beverages

• There are hundreds of nutrient market forms to choose from when developing a beverage concept, functional nutrients are most commonly used in beverages, microencapsulation and nanotechnology help a lot.

• Beverages are great vehicles for delivering nutrients that aid in relaxation, energy, mental focus, immunity, weight management, beauty, and relief from bone and joint pain.
Functional food as Functional Ingredients for beverages

Broccoli
This functional food contains significant amounts of calcium that is great for bone health and reduces the risk of breast cancer.

Soy beans
This functional food contains phytoestrogens/isoflavones (plant estrogens) that reduce risk of developing hormone related cancers like breast cancer, reduce cholesterol levels, decrease blood clotting, decrease risk for osteoporosis and help with menopausal symptoms as well.

Carrots
This functional food contains beta-carotene (plant precursor to vitamin-A) that decreases the risk for cataracts and improves immunity.
Tomatoes
This functional food contains lycopene which reduces the risk of prostate cancer and may reduce cardiovascular risk. The antioxidant lycopene is a pigment that makes fruits and vegetables red in color.

Avocado
This functional food contains heart healthy monounsaturated fats that lower cardiovascular disease risk.

Nuts
This functional food is great source of natural tocopherol (vitamin E) which is a potent anti-oxidant.

Berries
This functional food contains anthocyanins (pigments) that serve as potent antioxidants, inhibits enzyme which serves to lower cholesterol the same way that "statin" drugs do.
Antioxidants as Functional ingredients in Beverages

• Antioxidants The most common antioxidant cocktail is the combination of vitamins A, C, and E.

• The main goal of antioxidants is to fight free radicals which are responsible and linked to many leading diseases in the world.

• Zinc is a key mineral that works as an antioxidant and an essential part of more than 200 enzymes involved in digestion, metabolism, reproduction and wound healing.

• Antioxidants may be utilized in beverages to help boost immunity, improve circulation and sharpen mental acuity.
Antioxidant-Rich Beverages

How do the popular beverages compare in antioxidant activity?

Antioxidant compounds are found in vegetables, fruits and many natural beverages like tea. Balanced diets are naturally-rich in antioxidants. Enjoy the variety, flavours and health potential in every serving!

2 cups black tea = 1 glass red wine = 7 glasses orange juice = 20 glasses apple juice

ANTIOXIDANT FILM
Nutraceuticals as Functional ingredients in Beverages

- Nutraceuticals do not fall under one of the other categories such as vitamins, minerals, amino acids, etc.

- The term nutraceutical was coined in the 1990's by Dr. Stephen DeFelice. He defined nutraceutical as: 'A nutraceutical is any substance that is a food or a part of a food and provides medical or health benefits, including the prevention and treatment of disease.'
Nutraceuticals

• Nutraceuticals include

• **omega** 3 which **control** inflammation while **promoting** energy, immunity and mental acuity.

• **Caffeine** is an excellent nutrients for providing energy.

• **Collagen** and **lycopene** may have a potential benefit to aid in the nutricosmetic category, essentially improving skin tone and fighting off the effects of aging.
Health Trends of Nutraceuticals
History: Health Trends

Major Health Trends

- Obesity
- Osteoporosis
- Dementia
- Elderly
- Diabetes
- Cardio-Vascular Disease (CVD)

Source: Frost & Sullivan
Health Trends: CVD

WHO estimates that about 24 million people annually will die globally due to CVD by 2030.

**Leading Causes of Deaths by CVD Globally**

- CHD (~43.0%)
- Stroke (~33.0%)
- Others (~24.0%)

**Key Findings & Trends**

- 78% CVD deaths from low- and middle-income countries
- 2010 – CVD is estimated to be the leading cause of death in developing countries.
- 2006 – CVD costs the EU healthcare system ~€110 billion (10% of the total healthcare expenditure)
- 2006 – Germany and UK had the highest healthcare cost per capita in EU (per annum)
- 1996-2006 – In the US death rates from CVD declined 29.2% and the actual number of deaths declined 12.9%
Health Trends: Diabetes

The global health expenditure on diabetes is expected to be at least $376 billion in 2010 and $490 billion by 2030.

Key Findings & Trends

- 1995 – 4% adults globally
- 2025 – 5.4% adults globally
- Individuals suffering from diabetes:
  - Rising 42% in developed countries, from 51 to 72 million
  - Rising 170% in developing countries, from 84 to 228 million
- Proportions of the diabetic population:
  - Developing countries projected to be younger (age between 45 & 64)
  - Developed countries projected to be older (age 65)

Source: King H, et al., Global burden of diabetes, Diabetes Care. 1998
Health Trends: Obesity

WHO estimate that 2.3 billion adults will be overweight and about 700 million will be obese by 2015.

Key Findings & Trends

- Prevalent in both children and adults of developing and developed countries.
- No longer limited to high-income countries – on the rise in low- and middle-income countries, particularly urban areas.
- 2005 – 1.6 billion overweight; 400 million obese.
- 2005 – 20 million children globally under the age of 5 years were overweight.
- Obesity is responsible for at least 2–8% of health costs and 10–13% of deaths in different parts of the EU Region.

Source: WHO
**Health Trends: Osteoporosis (The Silent Disease)**

IOF predicts that the worldwide cost burden of osteoporosis (for all ages) will increase to USD131.5 billion by 2050.

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**Key Findings & Trends**

- Osteoporosis is the cause of more than 8.9 million hip, wrist and spinal fractures worldwide each year.
- Is second only to cardiovascular disease as a global healthcare problem.
- Global numbers of hip fractures:
  - 1990 – 1.66 million
  - 2050 – 6.26 million
- Estimated annual direct cost of treating osteoporosis fractures in the USA, Canada and Europe alone is ~USD48 billion.
- EU and USA have the highest risk of hip fractures; however, 1 in 4 hip fractures now occur in Asia and Latin America. This is set to increase to 1 in 2 by 2050.

Health Trends: Dementia

It is estimated that 35.6 million people would have dementia in 2010, nearly doubling every 20 years to 65.7 million in 2030 and 115.4 million in 2050.

Key Findings & Trends

- With advanced age the risk of developing dementia increases – the prevalence roughly doubling every five years over the age of 65
- Predicted increase in the numbers of people with dementia:
  - 40% rise in Europe
  - 63% rise in North America
  - 77% rise in Latin American
  - 89% rise in developed Asia Pacific
- Globally the annual economic cost of dementia estimated at $315 billion
- The total annual costs per person with dementia; $1,521 in a low income countries and up to $17,964 in high income countries.
Health Trends: Aging Population

People aged 60+ utilise 3-5 times more healthcare services than younger people. Chronic diseases account for more than 60% of all healthcare spending.

- In 2000, >5% (606 million) of the global population was aged 60+. By 2050 this will be more than 21% (2 billion).
- 75% of people aged 60+ have one chronic condition, while 50% have two or more chronic conditions.
- **Health economics dictate a shift in spending** — away from treating and towards predicting, diagnosing and monitoring.
Pre/Probiotics as Functional ingredients in Beverages

- Pre/Probiotics Over the last several years, consumers began to understand what is digestive health and how it impacts our overall health and wellness.

So what are Probiotics and prebiotics and the different between them?
The differences between probiotics and prebiotics

Though the words probiotics and prebiotics sound rather similar, they aren't the same. Probiotics are living microorganisms which are like those healthy organisms that live within the human body. Prebiotics are nonliving and non-digestible substances which act together with naturally existing microorganisms. The function of probiotics and the function of prebiotics will be discussed below.

Natural sources of prebiotics and probiotics

Probiotics and prebiotics are found naturally in many types of foods. They are also added artificially in the manufacturing process. Foods that contain native probiotics include yogurt and yeast.

Prebiotics are found in foods such as bananas, grains, honey, asparagus, artichokes, onions, and garlic. When probiotics and prebiotics live together in a food item, they live in a symbiotic relationship. The prebiotics are the food that probiotics live on in the food item and within the human digestive system.
The Difference Between **Probiotics** and **Prebiotics**

This is your gut (intestines)

<table>
<thead>
<tr>
<th>Probiotics</th>
<th>Prebiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probiotics are alive!</td>
<td></td>
</tr>
<tr>
<td>Usually bacteria or yeast</td>
<td></td>
</tr>
<tr>
<td>Aid digestion &amp; other health benefits</td>
<td></td>
</tr>
<tr>
<td><strong>Good sources are:</strong></td>
<td></td>
</tr>
<tr>
<td>Yogurt, kefir, buttermilk, aged cheese, sauerkraut, kimchi, sourdough bread, miso, tempeh, kombucha, beer, wine</td>
<td></td>
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<tr>
<td>Prebiotics are a form of fiber</td>
<td></td>
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<tr>
<td>Serve as food for probiotics!</td>
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<tr>
<td><strong>Good sources are:</strong></td>
<td></td>
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<tr>
<td>Chicory root, artichoke and dandelion</td>
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<tr>
<td><strong>Foods you’ll actually eat:</strong></td>
<td></td>
</tr>
<tr>
<td>Garlic, leeks, onions, whole wheat, fruits, vegetables, legumes</td>
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</tbody>
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Dr. Shereen Lotfy Nassef
Research showed the importance of probiotics and prebiotic and its health impact:

- Help to alleviate diarrhea, inflammatory bowel disease, and lactose intolerance
- Enhance immune function
- Protect against gastrointestinal cancer
- Lower blood cholesterol
How To Launch A Successful Functional Beverage

Expert advice on getting your better-for-you beverage on shelves

Drink Healthy
Method to enhance active components in beverages

- Manipulating the beverage to get maximum level of active components
- Combination of nutrient ingredients rich in nutraceuticals
- Fortifying beverages with active ingredients
- Fermentation of beverages products
- Changing beverage habits
- Adding more colors to our beverages (Drinking a Rainbow Everyday)
Important examples of bioactive compound sources are concluded in a Color chart with bio-active compounds and their sources.
Conclusion

Mounting researches evidence showed that functional beverages containing physiologically-active components, may enhance health.

But functional beverages are not a magic bullet for poor health habits. There are no "good" or "bad" beverages, but there are good or bad choices and habits. Moreover, beverage is only one component of an overall lifestyle that can have an impact on health; other components include healthy food and beverages, smoking, physical activity, and stress. Functional beverages provide an opportunity to improve the health of peoples, reduce health care costs and support economic development.
Thank You

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