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BEVERAGES: ALTERNATIVE MEDICINE AND HEALTH BENEFITS

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Abstract

Since ancient time people consume different beverages and have attributed health benefits without any scientific basis. Beverages or drinks are liquid preparations used for human consumption worldwide in daily life. Beverages are classified as alcoholic and non alcoholic beverages. Alcoholic beverages including beer, wine, cider and sprits; non-alcoholic beverages including soft drinks like soda pop, sparkling water, iced tea, lemonade, root beer, fruit punch, milk, hot chocolate, tea, coffee, milkshakes, energy drinks, juice, and carbohydrate drink, have been part of human culture. Water itself is often not classified as beverage but water is the chief constituent of all the beverages that maintain body electrolyte level and responsible for change in volume of blood circulation. Complete removal of water cause death faster than other substance. Some of these beverages are use as a traditional medicine for the treatment of chronic and acute diseases. Tea contains theobromine, theophylline, caffeine, polyphenols, antioxidants etc. and used in asthma (as bronchodilator), angina pectoris, peripheral vascular disease, coronary artery disease, lowering of blood cholesterol, and as anti cancer agent. Coffee contains psychoactive substance caffeine, having stimulant effect. Coffee also have antioxidant and use in prevention of Alzheimer's disease, dementia, Parkinson's disease, heart disease, diabetes mellitus type 2, non-alcoholic fatty liver disease, cirrhosis, and gout. Moderate consumption of alcoholic beverages decreases the risk of cardiac disease, stroke, hypertension, diabetes, and certain types of cancer, including colon, ovarian, and prostate carcinoma. The long term continuous consumption of heavy alcohol is responsible to risk of developing alcoholism and alcoholic liver disease. Juices are rich in vitamins, phytochemicals, antioxidants, fructose and essential minerals that provide health benefits.

Key Words:

Alcoholic beverages; Coffee; Health benefit of beverages; Juices; Non-alcoholic beverages; Polyphenols; Tea.

Introduction

Beverages are used at every age of life by paediatrics, geriatrics, men and women in daily life. Nowadays beverages become necessary component of daily human diet. Impacts of different type of beverages vary depending on sex and stage of life. Alcoholic beverages induce severe negative impact on children and women especially in pregnant women as compare to adult men. Preserved Non-alcoholic beverages for long time use, contain preservatives that also induce negative impact on women and paediatrics some times on geriatrics in comparison to adult men. There are two types of beverages naturally obtained and industrially manufactured. Naturally obtained beverages are milk, fruit juice, tea, coffee, vegetable juice, palm wine (tadi) etc. Industrially manufactured beverages are wine, beer, soft drink, preserved modified fruit juices, synthetic flavour added drinks, energy drinks, carbohydrate drinks etc. They are also classified as alcoholic and non-alcoholic beverages according to their alcoholic content. Non-alcoholic beverages contain less than 0.5% of alcohol by volume (1). Alcoholic beverages contain 3% and above ethanol.

Alcoholic Beverages**Wine**

Wine is one of the alcoholic beverages extensively used globally. It contains polyphenolic compounds and ethanol. Wine polyphenols are mixture of flavanoids and non-flavanoids, these compounds act as potent antioxidant that reduces LDL (low density lipoproteins) cholesterol oxidation, modulating cell signalling pathways and reduces platelet aggregation. Red wine is more beneficial than white wine as it contains high amount of polyphenols (2). Moderate consumption of red wine induce beneficial effect on human health i.e. chemoprotective, anti-inflammatory, anti-diabetic, gastrointestinal protective, neuroprotective, prevention of myocardial injury, antihypertensive, angiogenesis, and inhibit collagen deposition (3). Polyphenolic compounds exhibits antioxidant (4), anticarcinogenic (5), anti-inflammatory (6), hypotensive (7), anticoagulant property (8) and estrogenic activities (9).

Table-1: List of polyphenolic compounds present in red wine (2).

Polyphenolic compounds present in red wine	
Flavanols	Flavonols
(+)-Catechin	Isorhamnetin
(+)-Gallocatechin	Isorhamnetin 3- <i>O</i> -glucoside

(-)-Epicatechin	Kaempferol
(-)-Epicatechin 3- <i>O</i> -gallate	Kaempferol 3- <i>O</i> -glucoside
(-)-Epigallocatechin	Myricetin
Procyanidin dimer B1	Quercetin
Procyanidin dimer B2	Quercetin 3- <i>O</i> -arabinoside
Procyanidin dimer B3	Quercetin 3- <i>O</i> -glucoside
Procyanidin dimer B4	Quercetin 3- <i>O</i> -rhamnoside
Procyanidin dimer B7	Quercetin 3- <i>O</i> -rutinoside
Procyanidin trimer T2	Hydroxybenzoic acids
Prodelpinidin dimer B3	2,3-Dihydroxybenzoic acid
Flavanones	2-Hydroxybenzoic acid
Hesperetin	4-Hydroxybenzoic acid
Naringenin	Gallic acid
Naringin	Gallic acid ethyl ester
Hydroxyphenylacetic acids	Gentisic acid
4-Hydroxyphenylacetic acid	Protocatechuic acid
Stilbenes	Syringic acid
<i>d</i> -Viniferin	Vanillic acid
<i>e</i> -Viniferin	Hydroxycinnamic acids
Pallidol	2,5-di- <i>S</i> -Glutathionyl caftaric acid
Piceatannol	Caffeic acid
Piceatannol 3- <i>O</i> -glucoside	Caffeoyl tartaric acid
Resveratrol	Ferulic acid
Resveratrol 3- <i>O</i> -glucoside	<i>o</i> -Coumaric acid
Hydroxybenzaldehydes	<i>p</i> -Coumaric acid
Protocatechuic aldehyde	<i>p</i> -Coumaroyl tartaric acid
Syringaldehyde	Sinapic acid

Beer

Beer is one of the most consumed alcoholic beverages around the world that contains mineral, carbohydrate, amino acids, vitamins and polyphenolic compounds. Moderate consumption of beer also have similar beneficial effect as wine i.e. antioxidant, anti-inflammatory, anticarcinogenic, estrogenic and antiviral activity. The polyphenolic

compounds present in beer are listed under table 2. An epidemiological study shows that beer and wine have similar cardiovascular protective effect (10). The International Agency for Research on Cancer (IARC) has classified ethanol as carcinogenic to humans [11]. However, there is evidence that moderate wine consumption may decrease the risk of several cancers, including colon, basal cell carcinoma, ovarian and prostate cancer [12, 13].

Table-2: List of polyphenolic compounds present in beer (2).

Polyphenolic compounds present in beer	
Simple Phenols	Flavanones
Vinil-4-fenol	Isoxanthohumol
Vinil-4-guayacol	8-prenilnaringenin
Etil-4-fenol	6- prenilnaringenin
Isoeugenol	6- geranilnaringenin
Tyrosol	Taxifolin
Propyl-4-siringol	Flavanols
2,3-Dihydroxy-guaiacyl propan-1-one	(+)-Catechin
Phenolic acids	(-)-Epicatechin
4-Hydroxyfenilacetic	Catechin galate
homovanillic	Epicatechin galate
Aliquilphenols	Procyanidin B3
4-Etilcatecol	Prodelphynidina B3
4-Mtilcatecol	Prodelphynidina B9
3-Mtilcatecol	Procyanidin C2
Vinil-4-fenol	Flavonols
Benzoic acid derivatives	kanpherol
3,5-Dihydroxybenzoic	Kanpherol-3-rhamnoside
2,6-Dihydroxybenzoic	Quercetin
2-Hydroxybenzoic	3,7-Dimetilquercetin
3-Hydroxybenzoic	Miricetin
4-Hydroxybenzoic	Quercetin 3-O-Arabinoside
Protocaatecuic	Quercetin 3-O-Rutinoside
Vanillic	Quercetrin
Gallic	Isoquercitrin
Siringico	Rutin
o-Vanillin	Isoflavanes

Siringic aldehyde	Daidzein
Cinnamic acids	Genistein
p-coumaric	formononetin
o- coumaric	Biochanin A
m- coumaric	flavones
5-caffeoilquinic	Apigenin
Caffeic	Humulones
Ferulic	Iso-humulones
Sinapic	Other polyphenols
Chalcones	Catechol
Xanthohumol	Pirogalol

Non-Alcoholic Beverages

Tea

Tea is one of the most popular beverages consumed around the world. Tea is commercially manufactured from the leaves of the plant *Camellia sinensis* and available in three forms green tea, black tea and oolong tea. Black tea is prepared by the curing process of maceration and oxidation by exposure to atmospheric oxygen [14]. To prepare green tea enzymatic oxidation is prevented by steaming the fresh leaves whereas; oolong tea is semi-fermented to permit a moderate level of enzymatic oxidation during processing [15]. Consumption rate of black tea, green tea and oolong tea is 78%, 20%, and 2% worldwide respectively (16). Tea contains polyphenols and other compounds like alkaloids (caffeine, theophylline and theobromine), amino acids, carbohydrates, proteins, chlorophyll, minerals, fluoride, aluminium, lead, and other volatile organic compounds (17). Specially green tea contains significant amount of catechin flavonoid (18).

Green tea is unfermented dried leaves of *Camellia sinensis* and has been consumed by humans from ancient time worldwide. It has been used as a remedy for a wide array of diseases like asthma (as bronchodilator), angina pectoris, peripheral vascular disease, coronary artery disease, lowering of blood cholesterol, and as anti-cancer agent. More recently, a large number of in-vitro and in-vivo scientific studies have supported that the polyphenols from green tea can provide a number of health benefits. It reduces low density lipoproteins and hence reduces cholesterol level, also shows anti bacterial, antioxidant and anti-inflammatory property. A major health benefit of green tea is due to presence of catechins flavanoid. Major catechins are (-) epicatechin gallate (ECG), (-) epicatechin, (+) gallic catechin

(GC), (-) epigallocatechin (EGC) and (-) epigallocatechin gallate (EGCG). GC, EGC and EGCG possess strong

bactericidal as well as antibacterial activity and used to prevent dental caries (19).

Table-3: List of the compounds present in tea and their respective effects on body.

Chemical constituents	Effect on body
Polyphenols Catechins (19) <ul style="list-style-type: none"> • (-) epicatechin gallate (ECG) • (-) epicatechin • (+) gallic acid (GC) • (-) epigallocatechin (EGC) • (-) epigallocatechin gallate (EGCG) 	Reduces cholesterol level Antibacterial activity Antioxidant and anti-inflammatory property Reduce harmful effects of exposure to UV radiation cancer chemoprotective
Alkaloids <ul style="list-style-type: none"> • Caffeine • Theophylline • Theobromine 	Remedy of asthma (as bronchodilator), angina pectoris, peripheral vascular disease, coronary artery disease, lowering of blood cholesterol
Others <ul style="list-style-type: none"> • Amino acids • Carbohydrates • Proteins • Chlorophyll • Minerals • Fluoride • Aluminium, • Lead 	Antibacterial, Antioxidant

Coffee:

Coffee is obtained from roasted or baked seeds of *coffea arabica*. Apart from being energy booster, several studies have illustrated other benefits associated with consumption of coffee, when consumed in controlled quantity [20].

Effect of coffee depends upon how quickly body metabolizes it. The complex chemical compositions of coffee along with its effects on body are listed in table 4.

Table-4: List of chemical constituents of coffee and their respective effects on body.

Chemical Constituents	Effect on Body
Caffeine	Increases memory Stimulate hair growth Relieve post work-out muscle pain Ward off Alzheimer's
Phenolic compounds <ul style="list-style-type: none"> • Chlorogenic acid • Ferulic acid • p-coumaric acid Magnesium Trigonelline Quinides	Antioxidant activity Improved insulin sensitivity
Diterpenes <ul style="list-style-type: none"> • Cafestol • Kahweol 	Anticarcinogenic properties

Consumption of coffee in a moderate amount has shown health benefits. Studies have shown that coffee may prevent certain disease like cancer, gallstones, neurodegenerative disorders and many effects. Scientific evidences are now available for such claim [21].

I. Cancer

Studies have shown that coffee intake could be beneficial for minimizing the risk of developing cancer at various body sites, which may include the oral cavity/ Pharynx, liver, endometrium, brain, colon and rectum. Further studies are still required to clarify such assets [22].

II. Fluid balance

It has been observed that coffee consumption avoid dehydration of body. Especially it has been seen in research that it endure performance when given before workout process. Short-term diuretic effect has also been evidenced due to coffee intake [23].

III. Gallstone

The effect of coffee is little different on gallstones which depends upon stage of gallbladder disease distension. This effect is based on cross-sectional studies. The chemical constituent of coffee,ie, caffeine initiates the contraction of gall-bladder. There is an inverse association between coffee consumption and gall bladder disease progression [24].

IV. Liver Function

Confined consumption of coffee reduces the risk of liver cancer. Even a research was carried out which concluded that patients with advanced hepatitis C-related liver disease could have a lower rates of disease progression due to moderate consumption of coffee. The pharmacology behind this is that, the caffeine metabolite, paraxanthine, suppresses the synthesis of connective tissue growth factor via a series of control cycles, as a result, progression of diseases like liver fibrosis, cirrhosis and liver cancer slows down [25].

V. Mental Performance

The European Food Safety Authority deduced that 75mg of caffeine could help in inducing alertness and attention. The research has also shown that coffee intake improves sleep quality. Coffee proves to be effective during night shifts, long distance travelling and jet lag [26].

VI. Neurodegenerative Disorder

It has been observed that caffeine antagonize adenosine A2A receptors. The most prominent effect of coffee consumption is seen especially in women, as it decelerate physiological, age-related cognitive relapse. Even coffee intake also minimizes the risk of Parkinson’s disease. Protective effect against stroke has also been evidence due to consumption of coffee [27].

VII. Sports performance

Ergogenic effect, i.e., improvement of physical performance has been evidenced due to consumption of coffee. The most evident effect is in endurance sports like aerobics. It has been witnessed that caffeine intake improves time-trial performance. It has also been proved to reduce muscle pain [28]. The European food safety authority has alleged the cause and effect of caffeine intake on sports performance at different concentration. Effect of caffeine intake on sports performance at different concentration listed in table 5.

Table-5: Effect of caffeine intake on sports performance at different concentration.

Increase endurance performance	3mg/Kg body weight 1 hour before exercise
Endurance capacity	3mg/Kg body weight 1 hour before exercise
Reduction in perceived exertion	4mg/kg body weight 1 hour before exercise

Caffeine mediated antagonism pathway is known to be adopted pathway by which it exerts its effect. This pathway increases the production of adrenalin; as a result, it stimulates the production of energy. This also leads to improved blood flow to the heart and muscle.

VIII. Type 2 Diabetes

The scientific evidence has been recently observed which clearly states that there is a reduced risk of developing type 2 diabetes associated with coffee intake. Up to 6-8 cup of coffee per day (decaffeinated or regular) is responsible for lowering the risk of developing type 2 diabetes for up to 5-10%. The mechanism behind this phenomenon is still not available [29].

IX. Gastro-intestinal function

Reduced risk of gallbladder diseases has been associated with coffee consumption [30]. Coffee intake even may help to limit the liver disease progression.

Juice: Juices are considered as important beverage as body absorb the nutrient better in a juice form. Juice consumption also gives digestive system a rest from digesting fiber [31]. There are many benefits of Juicing. Depending upon which juices have been taken, the health benefits of juice are:

- Reduce risk of cancer
- Boost immune system
- Helps in removing toxins from the body
- Aid digestion
- Helps to lose weight

But, juice should be taken in a specific quantity. Even a 250ml of orange juice contains about 115 calories. It has been observed that many people drink more than this much quantity. The pure fruit juice is known to have a large quantity of naturally-occurring sugar and people end up drinking too much of it. The health benefits of Fruit juices and vegetable juices are listed in table 6 and 7 respectively.

Table-6: Health benefits list of Fruit juices and their constituents.

Fruit Juice	Constituents	Health Benefits
Pineapple	Vitamin C Manganese Copper Vitamin B1 Vitamin B6 Fiber Folate Pantothenic Acid	Fresh Juice known to be good for throat. Used in treatment of Diphtheria, throat and mouth infection. Juice known to lower the blood coagulation time so considered good for heart. Used in Acne treatment [32].
Amla	Gallic acid 3, 6-di-O-galloyl-D-glucose 1-O-galloyl-beta-D-glucose Ellagic acid Quercetin Chebulinic acid 3-ethylgallic acid Isostrictiniin Corilagin 4, 5-dihydroxy-benzoic acid Ascorbic acid [33]	Improves appetite. Has anti-ageing effect. It also has skincare and hair care property. Known to rejuvenate eye sight. Helps in secretion of insulin, therefore, cure diabetes. Helps to keep heart muscles healthy. It has laxative, cooling and digestive properties.
Fig	Potassium Fiber Calcium Manganese Banzaldehyde Beta-carotene Iron Flavonoids Ficin	Prevents constipation, anemia, digestion and cancer. It lower and control high blood pressure. Used for its anti-diabetic properties. Promotes bone density. It also lowers the level of triglycerides [34].

Guava	Vitamin A Vitamin C Vitamin E Vitamin K Thiamin Riboflavin Niacin Vitamin B6 Folate Pantothenic acid	Juices or decoction of guava leaves is proven to be helpful for the treatment of flu. It is also used in treating cold and viral infections [35]. Guava Juice is known to be used as an antibacterial agent. It is a good remedy for constipation and diarrhea. Guava Juice is also proven to be helpful in treating Dengue Fever.
Pomegranate	Potassium Folate Antioxidants [36]	Fluid regulation, aids in breakdown and repair of protein, red blood cells and DNA. If taken during pregnancy, pomegranate juice helps in healthy development of fetus brain and spinal cord. Antioxidant present neutralizes harmful free radicals in body. Juice keeps arteries healthy, reduces cholesterol level, prevents heart attack and strokes [37].
Coconut	Cytokinins -Kinetin -Trans-zeatin Bioactive enzyme -acid phosphatase -catalase -dehydrogenase -diastase -peroxidase -RNA-polymerases B-complex vitamins Potassium	Significant anti-ageing, anti-carcinogenic, and anti-thrombotic (anti-clot formation) effects. Coconut water offered to patients with diarrhea. Enzymes present help in the digestion and metabolism [38].
Papaya	Essential vitamins and minerals Enzyme called papain Vitamins A Vitamin B Vitamin C Vitamin K Beta-carotene	Effective in treating cancer, especially colon cancer. Enzyme papain helps to dissolve dead cells and gives a glowing skin. It also gives relief from gastric problems and indigestion. It minimizes constipation, effective in preventing stroke and high blood pressure, treats irregular menstruation, reduce respiratory organ inflammation and boosts the immunity levels [39].
Grapes (Purple)	Arginine Tartaric acid Carboxylic acid Vitamin A	Antimicrobial, Hepato- and brain-tissue-protective effects, regulates the immune system; reduce oxidation of

	Vitamin B1 Vitamin B2 Vitamin C Chromium Potassium Anthocyanins Flavonoids Tannins Inositol Choline Pectin	fat, strong anti-inflammatory benefits. It also possesses beneficial cardiac effects [40].
Apple	Vitamin A Vitamin B1 Vitamin B2 Vitamin B6 biotin folic acid Pantothenic acid. Antioxidant – quercetin Flavanoids	Apple juice is a good antidote to a high fat diet. It beneficial for the health of skin, hair and fingernails. It keeps the heart and lungs healthy. It also reduces the risk of lung cancer and helps to boost resistance to respiratory illnesses [41].
Orange	Vitamin C Vitamin A B-complex vitamin Flavanoids -Hesperetin -Naringin -Naringenin Alpha and Beta-Carotenes Beta-cryptoxanthin Zea-xanthin Lutein	Orange juice has laxative effect. It is known to protect mucous membrane of the colon. Its constituents help in decreasing exposure time to toxic substances and also bind to cancer causing chemicals in colon [42]. The juice known to boost immune system. Vitamin A present helps in improvement of vision.

Table 7: Health benefits list of vegetable juices and their constituents.

Vegetable Juice	Constituents	Health Benefits
Ginger	Zingiberene Bisabolene Gingerols Shogaols Magnesium Potassium Vitamin B6 Vitamin E Copper Manganese Iron	Preventive and protective against Diabetes Mellitus. It also has healing properties. Proven to reduce symptoms of arthritis and asthma. Anti-inflammatory and anti-biotic properties. Treat flu and cold. Aids in weight loss. Excellent carminative and intestinal spasmolytic [43].
Carrot	Vitamin A Calcium Phosphorous Iron Sodium Potassium Vitamin B complex Beta-carotene	Carrot juice flushes out toxins from the body [44]. The juice also shows anti-phobic and anti-coronary properties. It also delays formation of cataracts, eye-floaters, Hypersensibility, hypermetropia and myopia.
Tomatoes	alpha- and beta-carotene,	It helps to reduce the risk of

	lutein lycopene Vitamin E Vitamin C Vitamin B Chromium	pancreatic cancer. It is also good for skin. It has also proven to reduce cholesterol levels, prevent heart attacks and strokes. Tomatoes juice intake can also reduce the amount of damaged done to body by smoking cigarettes [45].
White Gourd	Vitamin B Vitamin C Sodium Potassium Iron	Aids in weight loss. Reduce Blood pressure and cholesterol levels. Also treat urinary disorders [46].
Pumpkin	Triterpenoids Cucurbitan glycosides Carotenoids -Lutein -Beta-carotene Cucurmosin-a ribosome-inactivating protein	Pumpkin juice has shown anthelmintic, hypotensive, and hypoglycemic activity [47].
Bitter-Gourd	Charantin Polypeptide P Vitamin B1 Vitamin B2 Vitamin B3 Vitamin C Manganese Folate Zinc Phosphorous Magnesium	Juice has been confirmed to have a hypoglycemic effect due to presence of charantin. It treat blood disorders, useful in early stage of cholera, improve energy and stamina, improve eye sight, built immune system, improve asthma, bronchitis and pharyngitis [48].

Energy drinks:

An energy drink is one of a kind of beverage which is known to have stimulant drugs, majorly caffeine, marketed so as to provide physical and mental stimulation. The two main ingredients which provide energy are sugar and caffeine. The permitted quantity of caffeine to be added as ingredient in energy drinks lies between 70 to 200 mg per can [49]. The mechanism by which caffeine works is by inhibiting the effect of adenosine, which results to cause neurons in the brain to work very fast. Just like in emergency situation, the pituitary gland starts the body's "fight or flight" response by liberating adrenalin. Adrenalin stimulates faster heart beat and dilation of the eyes. It also triggers the liver to release extra sugar into bloodstream. Caffeine also affects the levels of dopamine. All these biochemical reactions give more of energy to perform task. Diuretic affect of caffeine has also been evident. Some of the energy drinks ingredients with their functions are listed in table 8.

Table-8: List of energy drinks Ingredient with their functions.

Ephedrine	Central nervous system stimulant which is a common ingredient in weight-loss products and decongestants.
Taurine	A natural amino acid that helps to regulate heart beat and muscle contractions.
Ginseng	A root which have several medicinal properties, such as reducing stress and boosting energy levels.
B-Vitamins	A group of vitamins which converts sugar to energy and they also known to improve muscle tone.
Guarana seed	A stimulant that comes from a small shrub.
Carnitine	An amino acid that metabolizes fatty acid.
Creatine	An organic acid known to supply energy for effective muscle contractions.
Inositol	A type of vitamin B complex which helps relay messages within cells of body.
Ginkgo biloba	A substance extracted from seeds which enhance memory.

Milk

Milk is one of the most usable white liquid beverages worldwide, produced by mammary glands of mammals. It is very first beverage humans start to drink. Milk contains natural compounds/minerals that are essential for the human body. It also provides nutrition and keeps the body healthy.

Table-9: List of milk constituents and their effect on body (50).

Milk constituents	Effect on body
Milk protein <ul style="list-style-type: none"> • Caseins • whey protein (β-lactoglobulin and α-lactalbumin) • Immunoglobulins, serum albumin 	Provide energy, nutrition & immunity
Fat <ul style="list-style-type: none"> • Saturated fat • Polyunsaturated fat • Monounsaturated fat Carbohydrate <ul style="list-style-type: none"> • lactose 	Provide energy & Nutrition
Inorganic compounds <ul style="list-style-type: none"> • Calcium • Sodium • Potassium • Magnesium 	Essential for growth and development of bones, teeth and body function
Vitamins Fat soluble <ul style="list-style-type: none"> • Vit. A-62μg of vitamin A per 	Essential for body function

<p>glass (200ml)</p> <ul style="list-style-type: none"> • Vit. D- There is very little vitamin D in milk • Vit. E- 200ml serving of semi-skimmed milk typically provides 0.04mg of vitamin E. • Vit. K- There is little or no vitamin K naturally found in milk <p>Water soluble</p> <ul style="list-style-type: none"> • Vitamin B-12- 1 glass/200ml of semi skimmed milk will provide an adult (19-50 years) with the full daily requirement for vitamin B₁₂. • Thiamin (vitamin B₁)- 1 glass/200ml of semi skimmed milk will provide an adult (19-50 years) with 15% of their daily requirement for thiamin. • Riboflavin (vitamin B₂)- A 200ml glass of semi-skimmed milk provides 45% of an adult's (19-50 years) daily requirement for riboflavin. 	
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Conclusion

Beverages are used worldwide from the ancient time without knowing their health benefits, but researchers have proved that these beverages contains chemical moiety and provide health benefits when taken in a moderate amount.

There are many brands of beverages (alcoholic & non-alcoholic) have been marketed. In India in spite of alcoholic beverages non alcoholic beverages (tea, coffee, milk, vegg. & fruit juices and energy drinks) are commonly used and get the health benefits by the population.

As future prospective, the amount of different chemical moieties that have health benefits, if externally increased up to the therapeutic level in the respective beverages for the treatment of specific diseases or health problems. This kind of approaches may improve the quality of beverages and also contribute better to treat or improve human health.

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