

WATER AND OTHER BEVERAGES

Water is the major constituent of the human body.

Beverages are useful to relieve thirst and to meet fluid requirements of the body.

Some beverages provide nutrients while others act as stimulants.

Milk is an excellent beverage for all age groups as it is a rich source of nutrients.

Ques. - Why do we need water?

Ans. Water accounts for 70% of our body weight. It is a constituent of blood and other vital body fluids. Water plays a key role in elimination of body wastes and regulation of body temperature. The body loses water through sweat, urine and faeces. This loss must be constantly made good with clean and potable water. A normal healthy person needs to drink about 8 glasses (2 litre) of water per day. During very hot weather and while undertaking vigorous physical activity, this requirement increases as a considerable amount of water is lost through sweat.

Ques. - When is water considered safe and wholesome?

Ans. Water should be safe and wholesome i.e., it should be free from disease-causing agents like bacteria, viruses, parasites etc., and harmful chemical substances like pesticides, industrial wastes, heavy metals, nitrates, arsenic and excess of fluoride.

Fluorosis, a disease with bone deformities and dental problems, results from drinking water containing an excess of fluoride over long periods. Generally, a concentration of 0.5 to 0.8mg of fluoride per litre of drinking water is considered safe.

Ques. - How is water rendered safe?

Ans. If a water source is not safe for drinking, boiling it for 10-15 minutes is a satisfactory method of purification of the water. It kills all disease-causing organisms and also removes temporary hardness. However, boiling will not remove other chemical impurities.

Tablets containing 0.5 g of chlorine can disinfect 20 litres of water. There are many modern gadgets which claim to provide safe and wholesome water. However, they vary in efficacy. Drinking water standards are given below:

Drinking water standards

Sl.No.	Parameters	Prescribed by			
		BIS (IS 10500-91)		ICMR	
		Desirable Limit	Max. permissible Limits in the absence of alternate source	Desirable Limit	Max. permissible limits
1	2	3	4	5	6
1	pH	6.5 to 8.5	No relaxation	7.0 – 8.5	6.5 – 9.2
2	Total dissolved solids mg/L	500	2000	500	1500-3000
3	Total hardness as CaCO ₃ mg/L	300	600	300	600
4	Calcium as Ca mg/L	75	200	75	200
5	Magnesium as Mg mg/L	30	100	50	-
6	Chloride as Cl mg/L	250	1000	200	1000
7	Sulphate as SO ₄ mg/L	200	400	200	400
8	Nitrate as NO ₃ mg/L	45	100	20	100
9	Iron as Fe mg/L	0.3	1	0.1	1
10	Fluoride as F mg/L	1	1.5	1	1.5
11	Arsenic as As mg/L	0.05	0.05	-	0.05
12	Manganese as Mn mg/L	0.1	0.3	0.1	0.5
13	Zinc as Zn mg/L	5	15	0.1	5
14	Copper as Cu mg/L	0.05	1.5	0.05	1.5
15	Chromium as Cr mg/L	0.05	0.05	-	-
16	Lead as Pb mg/L	0.05	0.05	-	0.5
17	Mercury as Hg mg/L	0.001	0.001	-	0.001
18	Cadmium as Cd mg/L	0.01	0.01	-	0.01
19	Cyanide as CN mg/L	0.05	0.05	-	0.05
20	Minerals Oil mg/L	0.01	0.03	-	-
21	Phenolic compounds mg/L	0.001	0.002	-	-
22	Total Coliform MPN/100 ml	1	10	-	-
23	Residual free chlorine mg/L	0.2	-	-	-
24	Aluminium as Al mg/L	0.03	0.2		
25	Boron as B mg/L	1	5		
26	Selenium as Se mg/L	0.01	-		
27	Pesticides	Absent	0.001		

Source: <http://indiawaterportal.org>

Ques. - How nutritious is milk

Ans. Milk is a well-accepted and wholesome food and beverage for all age groups. It contains most of the nutrients necessary for growth and development. It is, therefore, specially useful for feeding infants, toddlers, growing children and expectant women and nursing mothers.

All the macro- and micro-nutrients are present in an easily digestible and assimilable form in milk. Milk proteins possess high biological value which is almost equal to that of meat, eggs and other high quality animal proteins. Milk proteins are valuable supplements to most vegetarian diets.

Milk is a rich source of bioavailable calcium which helps in the building up of strong bones. Milk fat serves as a vehicle for important fat-soluble vitamins A, D and E. Since milk fat is of the saturated type, those who have been advised a low fat diet can consume

skimmed/toned milk. For strict vegetarians, milk is the only source of vitamin B. Milk is also rich in riboflavin, but is a poor source of vitamins C and iron. However, only pasteurized or boiled milk should be consumed to ensure protection from disease-causing agents.

Ques. - What is lactose intolerance?

Ans. Lactose, the sugar present in milk, helps in the establishment of lactic acid bacteria in the intestinal tract. If lactase, an enzyme required for digestion of lactose, is not present in sufficient amounts, such individuals develop abdominal symptoms on consumption of excess of milk. This is common in children following diarrhoea and is described as lactose intolerance.

Drinking small quantities of milk at a time does not usually cause any gastrointestinal problems and there is no need to discourage intake of milk by children except in severe cases. In case of severe cases, milk should be replaced by inclusion of Curd, soya milk cheese etc.

Ques. - What are soft drinks?

Ans. Soft drinks are generally of two categories: natural soft drinks and artificial or synthetic soft drinks. Water is the main constituent of all beverages.

Orange, lemon, grape, mango, pineapple and apple are generally used in making fruit juice. Cane sugar juice is also extensively used in India, particularly during summer. Natural fruit juices provide in addition to energy, some vitamins (beta carotenes, vitamin C) and minerals (potassium, calcium). Fruit juices are ideal beverages for hypertensive patients. However, they cannot be equated with fruits which also provide dietary fibre.

Compared to natural fruit juices, synthetic drinks do not contain nutrients unless they are fortified. Generally, synthetic drinks are prepared using preservatives and artificial food colours and flavours such as such as cola, orange, mango and lime, and mostly they are carbonated.

Carbonated beverages contain phosphoric acid and may damage the enamel of teeth, and affect appetite if taken in excessive amounts. Water used for preparation of beverages should be free from disease-causing agents and harmful chemical impurities. Beverages like buttermilk, lassi, fresh fruit juices, coconut water are better than synthetic drinks.

Ques. - What about tea and coffee?

Ans. Tea and coffee are popular beverages. They are known to relieve mental and muscular fatigue. This characteristic stimulating effect is due to their caffeine content.

A cup (150 ml) of brewed coffee contains 80-120 mg of caffeine and instant coffee 50-65 mg, while tea contains 30-65 mg of caffeine.

Amount of Caffeine (mg) in 150 ml (1 medium cup)	
Brewed Coffee	80-120 mg
Instant Coffee	50-65 mg
Tea	30-65 mg

Caffeine stimulates the central nervous system and induces physiological dependence. Generally, low doses (20-200 mg) of caffeine produce mild positive effects like a feeling of wellbeing, alertness and being energetic. Higher doses (>200 mg) can produce negative effects like nervousness and anxiety, especially in people who do not usually consume caffeine-containing beverages. Therefore, moderation in tea and coffee consumption is advised so that caffeine intake does not exceed the tolerable limits.

Tannin is also present in tea and coffee and is known to interfere with iron absorption. , tea and coffee should be avoided at least for one hour before and after meals.

Coffee consumption is known to increase blood pressure and cause abnormalities in heart-beat. In addition, an association between coffee consumption and elevated levels of total and LDL cholesterol ('bad' cholesterol), triglycerides and heart disease has been demonstrated. Therefore, individuals with heart disease need to restrict coffee consumption. Also, those who experience adverse effects from caffeine should stop drinking coffee.

Besides caffeine, tea contains **theobromine and theophylline**. These are known to relax coronary arteries and thereby promote circulation. Tea also contains flavonoids and other antioxidant polyphenols, which are known to reduce the risk for coronary heart disease and stomach cancer. However, as a result of its caffeine content, excess tea consumption is deleterious to health. Decaffeinated coffee and tea are being marketed to obviate the adverse effects of caffeine.

Ques. – What are the nutritional benefits of consuming tender coconut water?

Ans. Tender coconut water is nutritious beverage. It has a caloric value of 17.4 per 100 gm. The concentration of sugar steadily increases from 1.5% to about 5.5% in the early months of maturation and this slowly falls to about 2% at the stage of full maturity.

Tender coconut water contains most of the minerals such as:

Minerals	Amount
Potassium	(290 mg%)
Sodium	(42 mg%)
Calcium	(44 mg%)
Magnesium	10 mg%
Phosphorus	9.2 mg%
Iron	106 mg%
Copper	26 mg%

It is oral rehydration medium keeps the body cool. However in patients with hyper kalaemia (a higher than normal levels of potassium in the blood) such as in patients with renal failure, acute adrenal insufficiency and in patients with low urine output, tender coconut water should be avoided.

Ques. – Why alcohol consumption is considered harmful?

Ans. Alcoholic beverages contain ethyl alcohol in varying proportions.

Beer contains 2-5% and wine 8-10% of alcohol while brandy, rum and whisky contain much higher concentrations (30-40%).

Alcohol has been extensively abused as an appetite stimulant and as a sedative-hypnotic drug. Alcohol intake, which is initiated as an innocent social habit gradually result in a serious addiction. It may lead to several serious psycho-social problems and accidents.

Alcohol provides higher calories (7 Kcal/g) than carbohydrates and proteins and, thus, can contribute to obesity. Ironically, excessive intake of alcohol is known to suppress appetite and interfere with absorption and metabolism of nutrients, leading to various nutritional deficiency diseases.

Excessive intake of alcohol suppresses appetite and as a result, leads to several nutritional deficiency diseases. People who regularly consume more than two alcoholic drinks (about 30 ml of ethanol) are at a higher risk for hypertension and stroke.

Alcohol intake has also been shown to increase the risk of cancer of the mouth, larynx and oesophagus, prostate and of the breast in women. Excessive alcohol intake weakens the heart muscle (cardiomyopathy) and also damages the liver (cirrhosis), brain and peripheral nerves. It also increases serum triglycerides.