



# Health Drinks

## *Is your milk richer for it?*

The term 'health drink' needs some explaining first. Malt-based beverages are what are popularly referred to as health drinks in India. These beverages enhance the taste of milk and are positioned as energy drinks with a nutritional thrust. Just as well, for the growing awareness around health food and beverages has meant a consistent boost for products in the 'health and nutrition' segment. It also helps that companies keep adding to the variety of tastes and flavours. In view of the growing popularity of the 'health drinks' segment overall, at Consumer Voice we took up eight brands for comparative testing – four brands were malt-based food and four were proprietary food including one high-protein proprietary food. We took particular note of the label declarations with regard to nutritional contents and other claims.

*A Consumer Voice Report*

**T**he national standards in India have spelled out various requirements for health drinks covering quality, safety and acceptability aspects. As per our standard procedure, we undertook market research to identify the popular and regular-selling brands across the country. While the four proprietary brands – namely Ensure, Protinex, Complan and PediaSure – are not standardised under any regulations, there are safety and nutritional requirements that they need to fulfil.

The key parameters for which the health drinks were tested included energy value, protein, vitamins, calcium, iron, potassium, fat, moisture and acid-

insoluble ash. It is a matter of some relief that none of the tested brands contained either trans fat or cholesterol. You may want to check your favoured brand for vitamins B3 and D, since the test results showed a considerable variation among the brands.

The tests were conducted at an NABL-accredited laboratory and as per requirements specified in Food Safety and Standards (FSS) Regulations, 2011.

A major health-related parameter was microbiological safety. We conducted tests for 10 microbiological activities.

Malt is germinated cereal grains that have been dried in a process known as malting. The grains are made to germinate by soaking in water, and are then halted from germinating further by drying with hot air.

Malted foods can be broadly categorised as:

- **Malted milk foods:** These are defined (under Food Safety and Standards Rules) as products obtained by mixing whole milk, partly skimmed milk or milk powder with the wort separated from a mash of ground barley malt, any other malted cereal grain and wheat flour, or any other cereal flour or malt extract with or without addition of cocoa powder.
- **Malt-based foods:** These are defined (under Food Safety and Standards Rules) as products obtained by mixing malt (wort or flour or malt extract) of any kind obtained by controlled germination of seeds (cereals and /or grain legumes), involving mainly steeping germination and kiln-drying processes, with other cereal and legume flour with or without whole milk or milk powder and/or cocoa powder.



### What Does It Mean If Your Food Is 'Proprietary'?

It means that the food has not been standardised as per any regulation and has no definite formulation. The only requirement for these types of supplements is that they mention the ingredients used and the nutritional parameters on their packaging, in addition to conforming to obligatory packaging, labelling and legal metrology rules.

India is claimed to be the world's largest malt-based drinks market and accounts for about 22 per cent of the world's retail volume sales as per reports.

Rank	Total Score out of 100 (rounded off)	Brand	Type	MRP (Rs)	Net Weight (gm)	
<b>Malt-based food</b>						
1	74	Boost	Malt-based	232	450	
2	73	Horlicks	Malt-based	230 (free sipper worth Rs 120)	500	
3	69	Amul Pro	Malt-based	170	500	
4	68	Bournvita	Malt-based	208	500	
<b>Proprietary food (for children)</b>						
1	73	PediaSure	Nutritional powder (proprietary food)	1,180	1000	
2	72	Complan	Proprietary food	255 (free tomato ketchup of 200 gm worth Rs 59)	500	
<b>Proprietary food (specially recommended for adults)</b>						
	76	Ensure	Proprietary food	525	400	
	74	Protinex	Proprietary food	500	400	

Score Rating: >90: very good\*\*\*\*\*, 71–90: good\*\*\*\*, 51–70: average\*\*\*, 31–50: poor\*\*, up to 30: very poor\*

\*With regard to recommendations/claims made by companies, we had asked GlaxoSmithKline, Abbott Healthcare, and Gujarat Co-Operative Milk Marketing Federation Ltd for scientific/clinical data as documentary evidence for their claims. While Abbott Healthcare sent an abstract in support of claims for Ensure and PediaSure, no reply was received from GlaxoSmithKline and Gujarat Co-Operative Milk Marketing Federation Ltd.

Notes:

a) Complan and Horlicks were sold with free 200 gm tomato ketchup and sipper respectively.

b) Ensure is recommended for recovery from illness and contains low sugar, while Protinex contains high protein and low fat. Therefore no comparison was done in their case.

### CV RECOMMENDATIONS | TOP PERFORMERS

**Malt-based food**

**Boost**

**Proprietary food (for children)**

**PediaSure**

### VALUE FOR MONEY

**Amul Pro**

**TESTED**

Best before (months)	Company Declaration/Recommendation	Manufactured/Marketed by
12	Three times more stamina scientifically proven*	GlaxoSmithKline Consumer Healthcare Ltd
12	Taller stronger sharper brain (clinically proven)*	GlaxoSmithKline Consumer Healthcare Ltd
12	Whey protein malt with DHA, DHA advantages (improves various organs)*	Gujarat Co-operative Milk Marketing Federation Ltd
12	Significant increase in level of B2, B9, B12 and positive iron status	Mondelez India Foods Pvt. Ltd
18	Nutrition to help kids grow, 'Height, Immunity and Brain development'*	Abbott Healthcare Pvt. Ltd
15	Growth-supporting nutrients, dairy-based beverage	Heinz India Pvt. Ltd
18	Nutrition to stay strong and active (not intended for use by children)	Abbott Healthcare Pvt. Ltd
15	Low-fat, high-protein, essential vitamins + minerals (recommended for adults)	Nutricia International Pvt. Ltd





### Key Findings

- Based on the overall test findings, the top performers are Boost in the malt-based food category and PediaSure in the category of proprietary food (for children).
- The value-for-money brand is Amul Pro.
- The highest energy value was found in PediaSure.
- Sugar was found lowest in Ensure and highest in Bournvita.
- In the sensory panel tests, Horlicks was the most acceptable brand.
- All the brands met the microbiological requirements and can be considered safe for consumption.
- Alcoholic acidity of all four brands of malt-based foods was found to be beyond the specified limit of 0.30 per cent.

### TEST RESULTS FOR PHYSICOCHEMICAL PARAMETERS

Energy | Protein | Acid-Insoluble Ash | Alcoholic  
Acidity | Total Sugar | Moisture | Fat | Vitamin D |  
Calcium | Phosphorus | Niacin | Saturated Fat | Iron |  
Potassium | Cholesterol and Trans Fat

#### ◆ Energy

The source of energy in this category of health drinks is carbohydrates, fats, etc., which are mainly derived from milk solids and sugar. There are no specified requirements in FSS Regulations, but these should be higher in health drinks. In our tests, we compared the total energy value (per 100 gm of sample calculated in Kcal) with the declared value.



- Energy value in all the brands was above or close to the declared value. PediaSure was found with the highest energy value and was hence assigned the highest score.

#### ◆ Protein

Proteins are instrumental in forming cells, repairing tissue, making antibodies, building nucleoproteins (RNA/DNA), carrying oxygen throughout the body and assisting muscle activity. These must be present in a good amount in health drinks. The source of protein here is mainly the milk solids added during preparation.

In malt-based foods, total protein shall not be less than seven per cent. There are no specified requirements for proprietary food.

- Most of the brands were found closer to the claimed values. Horlicks had protein content less than its declared value.
- Protinex had the highest protein content (as claimed), followed by Ensure.

#### ◆ Acid-Insoluble Ash

Acid-insoluble ash is the amount of ash that is insoluble in diluted hydrochloric acid. It indicates the presence of sand, dirt and dust. As per FSS Regulations, acid-insoluble ash in malt-based food shall not be more than 0.1 per cent by weight. There is no requirement for proprietary food.

- All the malt-based brands were found to be well within the specified limit.



### Total Ash

This is the inorganic residue that remains in a food product after heating. Ash is calculated by heating the sample at 550 to 600 degrees C, which destroys all organic matter. Ash in malt-based food shall not be more than five per cent by weight. There is no requirement for proprietary food.

- *All the malt-based products were within the permissible limit for total ash.*

### Total Sugar

Sugar is used as a taste enhancer; it also gives energy. Although no requirement for sugar has been specified, a higher quantity is not desirable. Too much sugar can lead to weight gain and other problems.

- *Sugar was lowest in Ensure (24.8 gm/100 gm) and highest in Bournvita (40.31 gm/100 gm).*

### ◆ Alcoholic Acidity

Alcoholic acidity increases over a period of storage. Higher alcoholic acidity is not desirable. For malt-based food, alcoholic acidity shall not be more than 0.30 per cent. There is no requirement for proprietary food.

- *Alcoholic acidity in all four brands of malt-based foods was found to be above the specified limit and hence did not meet the standard requirement.*

### ◆ Moisture

Moisture generally refers to the presence of water in a product. Moisture (above the specified limit) should not be present in the product as it causes the formation of lumps and can cause deterioration of the content. As per FSS Regulations, moisture content in malt-based food shall not be more than five per cent by weight. There is no such requirement for proprietary foods.

## Comparative Test

- All the malt-based food brands were within the specified limit for moisture.

### ◆ Fat

Fats are sources of essential fatty acids, an important dietary requirement. Fats play a vital role in maintaining healthy skin and hair, insulating body

organs against shock, maintaining body temperature, and promoting healthy cell function. Sources of fats are the milk solids as well as the cocoa solids added during the preparation of a product. There are no specified requirements for fats for either malt-based food or proprietary food.

- Fat content in most of the brands was found close to the declared value.

## No Bad Fats, Please

### Saturated Fat

Replacing foods that are high in saturated fat with healthier options can lower blood cholesterol levels and improve lipid profiles. Goes without saying that saturated fat in health drinks should be lower.

- Saturated fat was found lowest in Protinex (0.54 gm/100 gm) and highest in PediaSure (4.56 gm/100 gm).

### Cholesterol and Trans Fat

Trans fat is considered to be the worst type of fat. Unlike other dietary fats, trans fat — also called trans-fatty acids — both raises your LDL ('bad') cholesterol and lowers HDL ('good') cholesterol.

- Trans fat was not detected in any of the samples up to a detection limit 0.2 gm/100 gm.

As for cholesterol, it is needed by the human body but too much of it is not good. The body has two types of cholesterol – LDL (bad cholesterol), which can result in fatty deposits in our arteries, and HDL (good cholesterol), which absorbs cholesterol and carries it back to the liver, which flushes it from the body.

- Cholesterol was not detected in any brand up to the detection limit of 8 mg/100 gm.

### ◆ Calcium

The body needs calcium to maintain strong bones and to carry out many other important functions. Almost all calcium intake is stored in bones and teeth, where it supports their structure and hardness. In malt-based food, the calcium is primarily sourced from the milk solids as well as added to the composition. The RDA for calcium is 600 mg per day.

- With the exception of Bourmivita, all brands had calcium above their declared values. The highest quantity of calcium was found in Protinex (1,116.31 mg/100 gm), which therefore scored highest on this parameter.

### ◆ Phosphorus

Phosphorus is considered to be an essential nutrient required for proper cell functioning, regulation of

calcium, strong bones and teeth, and making ATP (adenosine triphosphate), a molecule that provides energy to our cells. Deficiency in phosphorus can lead to lowered appetite, anaemia, muscle pain, improper bone formation (rickets), numbness and a weakened immune system.

- Phosphorus was found highest in Protinex, followed by Boost and Complian.

### ◆ Iron

Iron is an integral part of many proteins and enzymes that maintain good health. Iron deficiency can cause a disease called anaemia, which makes one feel dizzy, tired and apathetic. The daily recommended dosage of iron is 17 mg. Iron is expected to be higher in health drinks.

- Iron was found to be highest in Boost (34.73 mg/100 gm) and lowest in Ensure (8.54 mg/100 gm).

## All of the Vitamins

### Niacin (Vitamin B3)

Also known as nicotinic acid, niacin plays an integral role in the conversion of food to energy and also helps synthesize necessary macromolecules like fatty acids and cholesterol. As a water-soluble vitamin, niacin is continually lost in the urine and needs to be replaced in one's diet. The Dietary Guidelines for Indians, 2011, by National Institute of Nutrition, Hyderabad, recommend that male adolescents consume 16 milligrams of niacin per day, while for females it is 14 milligrams.

In health drinks the major source of niacin is malt.

- *The highest amount of niacin was found in Boost (40.56 mg/100 gm), followed by Horlicks (27.25 mg/100 gm).*

### Vitamin D

It is a fat-soluble vitamin that is naturally present in very few foods. Vitamin D promotes calcium absorption in the gut and maintains adequate serum calcium and phosphate concentrations to enable normal mineralisation of bone and to prevent hypocalcaemic tetany. It is also needed for bone growth. Without sufficient vitamin D, bones can become thin, brittle, or misshapen. The recommended dietary allowance (RDA) for vitamin D is 600 IU or 15 mcg.

- *Vitamin D was highest in Horlicks (14.7 mcg/100 gm) and lowest in Ensure (3.31 mcg/100 gm).*

### Folic acid (Vitamin B9)

Folic acid is one of the most essential of all vitamins. It is an essential nutrient primarily because it is needed for the production and maintenance of new cells in the body. This becomes increasingly important during the periods when there is rapid cell growth and division, such as during pregnancy for women and infancy in children. As per Dietary Guidelines for Indians, 2011, the RDA is 200 µg per day.

Malt is an essential source of folic acid.

- *In the laboratory tests, all the samples were found to have folic acid in different amounts.*

### ◆ Potassium

Potassium is involved in nerve function, muscle control and blood pressure. It works with sodium to maintain the body's water balance. Malt beverages are generally a good source of potassium.

- *Highest amount of potassium was found in Ensure (1,096.62 mg/100 gm) and PediaSure (1,052.35 mg/100 gm).*

Note: As per the recommended guidelines of FSSAI, proprietary food may contain vitamins and minerals in quantities not exceeding one RDA of the respective micronutrients. In view of this, it is advisable that one does not consume more than the recommended doses.





## QUALITY AND

Parameter ↓	Weightage (%)	Malt-Based Food			
		Boost	Horlicks	Amul	Bournvita
Energy	10	7.68	7.92	7.59	7.66
Protein	8	4.83	4.65	5.24	4.61
Acid-insoluble ash	6	5.04	4.80	5.28	5.28
Alcoholic acidity	5	1.5	1.7	1.45	1.5
Total sugar	5	3.84	3.69	3.56	3.48
Moisture	4	3.60	3.84	3.40	3.15
Fat	4	1.77	1.68	1.67	1.61
Vitamin D	4	2.67	3.47	3.13	3.22
Calcium	4	3.02	2.98	2.16	1.97
Phosphorus	4	4	1.46	1.86	2.10
Niacin	4	4	4	1.74	2.62
Saturated fat	3.5	2.38	2.65	2.53	2.64
Iron	3	3	2.44	2.46	2.83
Potassium	3	2.30	0.71	0.70	2.06
Cholesterol and trans fat	2	2	2	2	2

### FOR MICROBIOLOGICAL ACTIVITY

All the brands were tested for 10 microbiological activities. Due to improper or poor hygienic condition during the manufacturing process, microorganisms may occur in the finished product.

- All the brands were within the specified limit for total bacterial count, coliform count, yeast and mould count, and faecal streptococci.
- *Salmonella*, *Shigella*, *E. Coli*, *Vibrio cholera*, *Vibrio parahaemolyticus* and *Staphylococcus aureus* were not detected in any brand.

### FOR SENSORY ATTRIBUTES

A seven-member team judged the sensory attributes of the health drinks. Firstly, the powdered form was examined for appearance and texture, flavour, odour, and taste, and scores were assigned by the panellists. Next, a fixed quantity of powder was mixed in

milk (as per recommendation) to examine various consumer-centric attributes such as taste, flavour/aroma, appearance/texture, residues/sediments and aftertaste feel. Accordingly, scores were given by the panellists.



## NUTRIENTS SCORES

	Proprietary Food (for children)		Proprietary Food (specially recommended for adults)	
	PediaSure	Complan	Ensure	Protinex
	9.73	7.95	8.81	7.07
	6.14	6.87	7.60	8.0
	4.80	5.28	5.04	5.28
	1.15	0.7	1.2	0.78
	4.56	4.17	4.64	4.61
	3.62	3.24	3.48	3.13
	3.95	2.41	3.08	1.44
	2.36	2.44	2.33	2.41
	3.04	3.68	3.04	4
	1.50	4	2.85	4
	1.82	1.19	2.68	1.20
	1.64	2.65	2.23	2.84
	1.88	1.90	1.85	2.11
	2.93	2.69	3	2.54
	2	2	2	2

- *In the powdered form, Horlicks was found to have the most acceptable taste, followed by Amul Pro. After preparation in milk, it was again Horlicks and Amul Pro that were found to have the most acceptable taste.*

Brand	Score out of 15
Horlicks	10.45
Amul	10.08
Boost	8.17
Bournvita	7.86
Complan	7.41
Protinex	7.23
Ensure	7.07
Pedia Sure	6.87



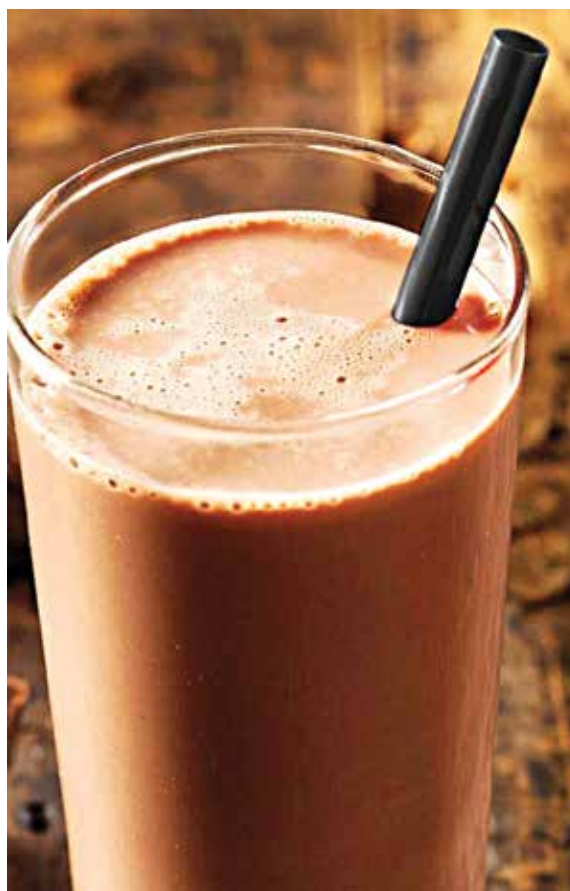
## Comparative Test

### FOR GENERAL QUALITIES

#### ◆ Packing

Health drinks are required to be packed in hermetically sealed, clean and sound tin containers or glass bottles or other moisture-proof containers – such as rigid containers made from high-density polyethylene (HDPE) or containers made from flexible packaging material such as laminates of paper, polyethylene and aluminium foil. The packaging is to be done in such a way so as to protect the product from deterioration during storage as well as from moisture. Score has been given depending on the quality of the packaging.

- *Packaging in all the brands was as per requirements.*



#### Marking and Net Weight

- *All the brands fulfilled the marking/labelling requirements set by Food Safety and Standards Regulations, 2011, especially with regard to nutritional information.*
- *According to Legal Metrology (Packaged Commodities) Rules, the maximum permissible error on net quantity is three per cent. In the tests, net weight of all the brands was found to be as per their declaration.*

#### Manufacturers' Comments

As a matter of policy, before publication, the test results of the brands are shared with their respective manufacturers/marketers inviting their views/comments. Some of the brands responded with comments on certain parameters. We provided the necessary clarification on those points after consulting with the designated laboratory, and where required after retesting.

1) **Complan:** The company shared their own lab test results and requested for reviewing the results for iron, niacin and phosphorus. Since retesting was already carried out, we declined to do further testing at that stage.

2) **Horlicks and Boost:** They mentioned discrepancies in the levels of certain nutrients (protein, iron, calcium and folic acid in Horlicks, and iron and folic acid in Boost). Again, since retesting was already done for the parameters mentioned, we declined to carry out further testing.