



## Health Drinks Making Milk Richer

The concepts of health and energy have perhaps never been as popular—or pursued/coveted—as they are now. (After all, even a leading burger chain is desperately seeking ‘nutritional’ status for its fare.) With market rivalries becoming an intense affair, brand strategists and marketers are eager to refresh their brand’s positioning and image. More often than not, it is the ‘health’ tag that becomes their ‘open sesame’ to the consumer universe. Certainly there is ambiguity to the whole thing and while companies may be tempted to use it to their advantage, as consumers we will be better off if we are aware of what we are consuming. So, over to the health drinks corner.

**A**t an estimated Rs 2,000 crore for the year 2009, it is a big, fat corner, though (and is poised to get bigger as the market for malt beverages in India is expected to reach US\$ 1.4 billion [roughly Rs 7,840 crore] by 2016). 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.

Malted beverages are popularly known as health drinks in India. While marketers have positioned such beverages as nutritious drinks, these are widely consumed as taste enhancers to encourage drinking of milk among growing children. Interestingly, several malt-based hot drinks – such as Boost, Complan and Bournvita – have repositioned themselves as health drinks. This is completely aligned with market realities, as greater health consciousness, aspirations for higher

### Key Findings

- In protein content, Protinex has the maximum percentage (31.4 per cent) by mass.
- In niacin (vitamin B3), Horlicks (Taller & Stronger) scores highest (15.56mg/100gm), followed by Complan (NutriGro) (14.28mg/100gm).
- Folic acid (vitamin B6) is found highest in Bournvita (1,805.54mcg/100gm), followed by Boost (1,157.72mcg/100gm).
- Potassium is found highest in Protinex (2941.3mg/100gm) followed by Complan (Planned Food) (800.17mg/100gm).
- The highest energy-giving health drink is Pediasure, followed by Complan (NutriGro).
- Complan NutriGro (35 per cent) and Protinex (37.42 per cent) are found with moderate amount of sugar content; Amul (pro) and Bournvita contain the maximum amount of sugar among the tested brands.
- Microbiological activity in all the brands is well below the maximum permissible limit. All the brands are found below the permissible limit for heavy metals.

standards of living and comfortable disposable incomes become the main drivers of consumption patterns. Across international markets it has been seen that the growth of the middle class has driven the uptrend in food industry in general and health beverages in particular.

### The Test, the Trepidations, Some Re-tests, and Everything in-between

The *Consumer Voice* test programme looked out for the popular brands of health drinks available in the market, to evaluate these in accordance with the

relevant Indian Standard as well as Food Safety and Standards Rules, 2011, especially with regard to label declaration of nutritional facts and other claims. The test parameters were mainly based on the specification for malted milk foods stated in BIS, namely IS: 1806-1975. The standard covers all types of malted milk foods being manufactured in the country except malted skim milk food, which is not recommended for infant feeding. While formulating this standard, due consideration has been given to the relevant rules prescribed by the GOI under the Food Safety and Standards Authority of India (FSSAI).

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 categorized 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 separately 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.
- **Proprietary food:** This is food that has not been standardized under any regulations and has no defined formulation. It is only required to mention the formulation, ingredients used and nutritional parameters on the packaging.

## COMPARATIVE TEST

### Brands Tested

A market survey of five metro cities preceded the short-listing of brands and determination of testing parameters – all of which were finalized by the Ombudsmen Committee. Comparative testing would be done on 12 regular-selling brands of health drinks,

each falling within one of three broad categories – malt-based with cocoa, malt-based without cocoa and proprietary foods. (As per Section 22 (4) of the FSS Rules 2011, proprietary or novel food means an article of food for which standards have not been specified but is not unsafe.)

| Rank                               | Brand                        | Type                            | Flavour/Category          | Brand Owned by                                | Manufacturer's Recommendation   |
|------------------------------------|------------------------------|---------------------------------|---------------------------|---|---|
| <b>Malt-Based – for Children</b>   |                              |                                 |                           |   |   |
| 1.                                 | Complan (NutriGro)           | Proprietary food                | Chocolate                 | Heinz India                                   | For children 2–4 yrs old  |
| 2.                                 | Horlicks (Taller & Stronger) | Malt-based                      | Cocoa powder              | GlaxoSmithKline                               | For growing children  |
| 3.                                 | Bournvita (Li'l Champs)      | Malt-based                      | Vanilla and cocoa         | Cadbury India                                 | For children 2–5 yrs old  |
| 3.                                 | Bournvita                    | Malt-based                      | Vanilla and cocoa         | Cadbury India                                 | For growing children  |
| 4.                                 | Boost                        | Malt-based                      | Cocoa                     | GlaxoSmithKline                               | Increasing endurance and stamina in children  |
| 5.                                 | Amul (pro)                   | Malt-based                      | Cocoa                     | Gujarat Cooperative Milk Marketing Federation | For growing children  |
| 5.                                 | Complan (Planned Food)       | Proprietary food                | Chocolate                 | Heinz India                                   | For growing children  |
| <b>Malt-Based – All Age Groups</b> |                              |                                 |                           |   |   |
| 1.                                 | Horlicks (Malt-Based)        | Malt-based                      | Original                  | GlaxoSmithKline                               | For entire family   |
| 2.                                 | Acti Life                    | Malt-based (proprietary)        | Vanilla                   | Zydus Wellness                                | For adults  |
| <b>Specifically Recommended</b>    |                              |                                 |                           |   |   |
| 1.                                 | Ensure (Chocolate)           | Proprietary food                | Science-based formulation | Abbott Healthcare                             | Adults – especially pre- or post-illness/surgery and as directed by physician/dietician |
| 2.                                 | Pediasure (Vanilla Delight)  | Proprietary food                | Balanced nutrition food   | Abbott Healthcare                             | For children two years and above, for healthy growth and development                    |
| 2.                                 | Protinex (Original)          | Proprietary food (protein-rich) | Chocolate                 | Wockhardt                                     | All age groups, especially to address protein deficiency                                |

**VALUE FOR MONEY – MALT-BASED DRINKS FOR CHILDREN**  
Horlicks (Taller & Stronger)



### The Parameters Explained

- **Vitamins (mg/100gm):** Vitamins are organic compounds needed in small quantities to sustain life. Lack of vitamins may cause certain deficiencies. In health drinks, the presence of various vitamins – namely vitamins A, B1, B2, C, E – was tested for identifying the quality of brands. (Note: Various vitamins are relatively unstable micronutrients and vary depending upon date of manufacture, storage conditions and instrumentation method followed for analysis. Hence, variable results are possible with respect to declared values.)
- **Energy value (in kcal):** Energy values per 100 gm of sample are calculated and compared with the declared value by manufacturers. The source of energy in this product is from carbohydrates, fats, etc., which are mainly derived from milk solids, sugar, etc.
- **Carbohydrates:** The test results are compared with the declared value by manufacturers.
- **Calcium (mg/100gm):** The body needs calcium to maintain strong bones and to carry out many other important functions. The calcium is primarily sourced from the milk solids as well as added to the composition.
- **Iron (mg/100gm):** The recommended daily allowance (RDA) for iron is 10mg to 18mg. Iron deficiency can cause a disease called anaemia, which makes one feel dizzy, tired and apathetic.
- **Total sugar:** This is calculated by totalling the glucose, fructose and sucrose constituents.
- **Fats (on dry basis) (as per IS, for cocoa-based product the minimum value is 6 per cent and for non-cocoa the minimum value is 7.5 per cent):** Fats play a vital role in maintaining healthy skin and hair, insulating body organs against shock, maintaining body temperature, and promoting healthy cell function. The source of fats is the milk solids as well as the cocoa solids added during the preparation of the product.
- **Protein (on dry basis) (as per IS, must not be less than 7 per cent):** 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. Most of the brands were found closer to the claimed values.

- **Folic acid:** It is one of the most essential of all vitamins. It is an essential nutrient primarily because it is needed for the production and the maintenance of new cells in your body. This becomes increasingly important during the periods where there is rapid cell growth and division such as during pregnancy for women and infancy in children. Malt is an essential source of folic acid.
- **Potassium (mg/100gm):** 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.
- **Phosphorus (mg/100gm):** Deficiency in phosphorus can lead to lowered appetite, anaemia, muscle pain, improper bone formation (rickets), numbness and a weakened immune system.
- **Niacin:** Also known as nicotinic acid, it 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 Food and Nutrition Board recommends that male adolescents and adults consume 16 milligrams of niacin per day, while for females it is 14 milligrams. In health drinks the major source of niacin is malt.



## COMPARATIVE TEST

| QUICK TOP 3s FOR THE KIDS                                   |   |   |  |  |
|---|---|---|--|--|
| VITAMINS (A, B1, B2, C, E)                                  | IRON  | CALCIUM   | PROTEIN  | TOTAL SUGAR  |
| 1. Bournvita<br>2. Horlicks (Taller & Stronger)<br>3. Boost | 1. Bournvita (Li'l Champs)<br>2. Bournvita<br>3. Horlicks (Taller & Stronger) | 1. Complian (Nutri Gro)<br>2. Boost<br>3. Complian (Planned Food) | 1. Complian (Planned Food)<br>2. Complian (Nutri Gro)<br>3. Horlicks (Taller & Stronger) | 1. Complian (Nutri Gro)<br>2. Complian (Planned Food)<br>3. Horlicks (Taller & Stronger) |

### FOR CHILDREN

#### Complan (NutriGro)

Malt-based; proprietary food

**Vitamins:** Score out of 10: 5.8

**Energy value:** Above declared value

**Carbohydrates:** Above declared value

**Calcium (per 100gm):** 662.73mg (above declared value)

**Iron (per 100gm):** 22.7mg

**Total sugar:** Score out of 10: 10

**Fats (% by mass):** 13.81

**Protein (% by mass):** 16.6 (above declared value)

**Folic acid:** Score out of 5: 2.44

**Potassium (per 100gm):** 626.86mg

**Phosphorus (per 100gm):** 570.89mg

**Niacin (per 100gm):** 14.28mg



#### Horlicks (Taller & Stronger)

Malt-based

**Vitamins:** Score out of 10: 6.59

**Energy value:** Above declared value

**Carbohydrates:** Above declared value

**Calcium (per 100gm):** 334.75mg (below declared value)

**Iron (per 100gm):** 35mg

**Total sugar:** Score out of 10: 8.02

**Fats (% by mass):** 2.64 (below declared value)

**Protein (% by mass):** 11.89 (above declared value)

**Folic acid:** Score out of 5: 5

**Potassium (per 100gm):** 457.26mg

**Phosphorus (per 100gm):** 328.66mg

**Niacin (per 100gm):** 15.56mg – highest among tested brands



#### Bournvita (Li'l Champs)

Malt-based; proprietary food

**Vitamins:** Score out of 10: 6.16

**Energy value:** Above declared value

**Carbohydrates:** Above declared value

**Calcium (per 100gm):** 304.35mg (above declared value)

**Iron (per 100gm):** 40.4mg

**Total sugar:** Score out of 10: 5.98

**Fats (% by mass):** 2.53

**Protein (% by mass):** 9.54 (above declared value)

**Folic acid:** Score out of 5: 4.22

**Potassium (per 100gm):** 528.79mg

**Phosphorus (per 100gm):** 248.08mg

**Niacin (per 100gm):** 13.4mg (below declared value)



**Bournvita**

Malt-based

**Vitamins:** Score out of 10: 7.57  
**Energy value:** Above declared value  
**Carbohydrates:** Above declared value  
**Calcium (per 100gm):** 455.47mg (above declared value)  
**Iron (per 100gm):** 36mg  
**Total sugar:** Score out of 10: 5.78  
**Fats (% by mass):** 2.29  
**Protein (% by mass):** 7.7 (above declared value)  
**Folic acid:** Score out of 5: 5  
**Potassium (per 100gm):** 640.24mg  
**Phosphorus (per 100gm):** 259.43mg  
**Niacin (per 100gm):** 10.7mg (below declared value)



**Boost**

Malt-based

**Vitamins:** Score out of 10: 6.39  
**Energy value:** Above declared value  
**Carbohydrates:** Above declared value  
**Calcium (per 100gm):** 620.42mg (above declared value)  
**Iron (per 100gm):** 4.15mg – lowest among tested brands  
**Total sugar:** Score out of 10: 6.54  
**Fats (% by mass):** 3.19  
**Protein (% by mass):** 8.05 (above declared value)  
**Folic acid:** Score out of 5: 5  
**Potassium (per 100gm):** 548.95mg  
**Phosphorus (per 100gm):** 256.36mg  
**Niacin (per 100gm):** 6.38mg (below declared value)



**Amul (pro)**

Malt-based

**Vitamins:** Score out of 10: 5.37  
**Energy value:** Below declared value  
**Carbohydrates:** Above declared value  
**Calcium (per 100gm):** 494.55mg (above declared value)  
**Iron (per 100gm):** 22.7mg  
**Total sugar:** Score out of 10: 5.52  
**Fats (% by mass):** 1.72 (below declared value)  
**Protein (% by mass):** 7.93 (below declared value)  
**Folic acid:** Score out of 5: 1.81  
**Potassium (per 100gm):** 495.47mg  
**Phosphorus (per 100gm):** 209.78mg  
**Niacin (per 100gm):** 0.817mg (below declared value)



**Complan (Planned Food)**

Malt-based; proprietary food

**Vitamins:** Score out of 10: 3.39  
**Energy value:** Above declared value  
**Carbohydrates:** Above declared value  
**Calcium (per 100gm):** 499.93mg (below declared value)  
**Iron (per 100gm):** 10.2mg  
**Total sugar:** Score out of 10: 8.95  
**Fats (% by mass):** 11.69  
**Protein (% by mass):** 16.84 (below declared value)  
**Folic acid:** Score out of 5: 1.70  
**Potassium (per 100gm):** 800.17mg  
**Phosphorus (per 100gm):** 551.8mg  
**Niacin (per 100gm):** 0.043mg (below declared value)



## COMPARATIVE TEST

### FOR ALL AGE GROUPS

#### Horlicks (Malt-Based)

##### Malt-based

**Vitamins:** Score out of 10: **9.03 – highest amount of vitamins**

**Energy value:** Above declared value

**Carbohydrates:** Above declared value

**Calcium (per 100gm):** 949.93mg (above declared value)

**Iron (per 100gm):** 31.4mg

**Total sugar:** Score out of 10: 7.59

**Fats (% by mass):** **1.62 (below declared value)**

**Protein (% by mass):** **10.73 (below declared value)**

**Folic acid:** Score out of 5: 5

**Potassium (per 100gm):** 562.32mg

**Phosphorus (per 100gm):** 252.11mg

**Niacin (per 100gm):** **5.7mg (below declared value)**



#### Acti Life

##### Malt-based; proprietary food

**Vitamins:** Score out of 10: 8.67

**Energy value:** Above declared value

**Carbohydrates:** **Below declared value**

**Calcium (per 100gm):** **953.48mg (above declared value – highest among tested brands)**

**Iron (per 100gm):** **90.9mg – highest among the brands**

**Total sugar:** Score out of 10: 6.27

**Fats (% by mass):** 2.21

**Protein (% by mass):** **6.95 (below declared value)**

**Folic acid:** Score out of 5: 2.39

**Potassium (per 100gm):** 381.84mg

**Phosphorus (per 100gm):** 251.6mg

**Niacin (per 100gm):** **1.3mg (did not declare)**



### SPECIFICALLY RECOMMENDED

#### Ensure (Chocolate)

##### Proprietary food

**Vitamins:** Score out of 10: 8.53

**Energy value:** Above declared value

**Carbohydrates:** Above declared value

**Calcium (per 100gm):** 416.08mg (above declared value)

**Iron (per 100gm):** 5.73mg

**Total sugar:** Score out of 10: 6.17

**Fats (% by mass):** 8.72

**Protein (% by mass):** 15.27 (above declared value)

**Folic acid:** Score out of 5: 3.69

**Potassium (per 100gm):** 568.35mg

**Phosphorus (per 100gm):** 314.26mg

**Niacin (per 100gm):** 8.21mg (above declared value)



#### Pediasure (Vanilla Delight)

##### Proprietary food

**Vitamins:** Score out of 10: 7.76

**Energy value:** **Above declared value – highest among tested brands**

**Carbohydrates:** Above declared value

**Calcium (per 100gm):** 723.09mg (above declared value)

**Iron (per 100gm):** 5.76mg

**Total sugar:** Score out of 10: 7.54

**Fats (% by mass):** 25.28

**Protein (% by mass):** 14.24 (above declared value)

**Folic acid:** Score out of 5: 3.23

**Potassium (per 100gm):** 659.79mg

**Phosphorus (per 100gm):** 337.53mg

**Niacin (per 100gm):** **5.42mg (below declared value)**



**Protinex (Original)**

**Proprietary food; protein-rich**  
**Vitamins:** Score out of 10: 7.32  
**Energy value:** Above declared value  
**Carbohydrates:** **Below declared value**  
**Calcium (per 100gm):** 950.02mg (above declared value)  
**Iron (per 100gm):** 12.7mg  
**Total sugar:** Score out of 10: 9.41  
**Fats (% by mass):** **12.51 (shows maximum**

**variation from declared value)**

**Protein (% by mass):** **31.4 (below declared value)**  
**Folic acid:** Score out of 5: 4.14  
**Potassium (per 100gm):**  
**2,941.3mg – highest among tested brands**  
**Phosphorus (per 100gm):** 420.19mg  
**Niacin (per 100gm):** **9.15mg (below declared value)**

**These Carried Some Weight, too**

- **Moisture (as per IS, the maximum limit is 4 per cent by mass):** Moisture should not be present in the product as it forms lumps and can cause deterioration of the content.

✓ All the brands are within the specified limit.

- **Sodium:** Sodium is an important element mainly consumed for controlling blood pressure and blood volume. The recommended dietary allowance for sodium is 0.8gm/kg of body weight.

✓ Complan (NutriGro) is found to have the ideal value of sodium and therefore assigned higher weightage.

- **Magnesium:** Magnesium is required by the body for maintaining normal muscle and nerve function, a healthy immune system and heart rhythm; it also helps build strong bones.



✓ Magnesium is found highest in Boost (203.4mg/100gm), followed by Acti Life

(166.7mg/100gm) and Protinex (164.8mg/100gm).

- **Dehydroascorbic acid (DHA):** This is important for healthy brain function and cardio protection.

× Three brands – Amul (pro), Bournvita (Li'l Champs) and Complan (NutriGro) – have claimed to contain DHA but none of these are found to contain DHA.

- **Total ash (on dry basis) (as per IS, maximum permissible limit is 5 per cent):** This is the inorganic residue that remains in food product after heating. Ash is measured by heating the sample at more than 550 °C–600 °C.

× Protinex (9.67 per cent) is found to be above the permissible limit.



- **Acid-insoluble ash (maximum permissible limit is 0.1 per cent):** This is the amount of ash that is insoluble in diluted hydrochloric acid.

× Only Horlicks (Taller & Stronger) (0.11 per cent) is above the permissible limit.

**All Pass**

**Net weight:** Complan (Planned Food) weighs lower by 2.17gm in the 500gm pack but remains well within the maximum permissible error as per Legal Metrology Rules, 2011. All the other brands are above the claimed weight.

**Packaging:** Health drinks are required to be packed in hermetically sealed 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.

Most of the brands are packed in HDPE or polypropylene (PP) material. Only Amul (pro) comes in glass jar.



## COMPARATIVE TEST

### Reaction of Manufacturers

As a matter of policy, before publication the test results of the brands tested are shared with their respective manufacturers/marketers inviting their views/comments. We reproduce here the reactions:

| Manufacturer (Brand Name)                                     | Manufacturer's Comment   | VOICE Society's Reply  |
|---|--|--|
| GlaxoSmithKline (Horlicks and Boost)                          | <p>i) Commented on the variations in the test results of certain vitamins and minerals because the results may vary depending upon the test method followed for the extraction of vitamins and minerals</p> <p>ii) Requested for retesting of certain parameters</p> | <p>i) The laboratory utilized for the testing of health drinks is NABL-accredited and the methods followed for testing various parameters are validated and also approved by NABL</p> <p>ii) Retested the parameters questioned and results as obtained were sent to manufacturers</p> |
| Abbott Healthcare (Ensure & Pediasure)                        | <p>i) Commented on the test methods used for quantification of vitamins</p> <p>ii) Their science-based formulations were not comparable with other malt-based products in the market</p>   | <p>i) Same as above</p> <p>ii) We had placed the tested brands in different categories and recommended these for relevant consumer groups</p>  |
| Heinz (India) (Complan [Planned Food] and Complan [NutriGro]) | <p>i) Commented on the test methods used for quantification of vitamins and potassium</p>  | <p>i) Same as above</p>  |
| Cadbury (India) (Bournvita [Li'l Champs] and Bournvita)       | <p>i) Vitamins B1, C, D, niacin and iron results were showing variability, which might be due to the different extraction methods</p>  | <p>i) Same as above; the lab rechecked the data and results found were satisfactory</p>  |
| Zydus Cadilla (Acti Life)                                     | <p>i) Commented on the test methods used for quantification of vitamins and potassium</p> <p>ii) Vitamins, niacin and folic acid were showing variability (might have been due to the test methods used); requested for retesting</p>                                | <p>i) Same as above</p> <p>ii) Retested the parameters questioned and results as obtained were sent to manufacturer</p>  |
| Protinex  | <p>i) Commented on the test result of protein quantification</p>   | <p>i) Retested the sample for protein and results obtained were sent to manufacturer</p>   |

### Sensory Panel Test

A team of 10 expert panel members was formed for judging the sensory attributes of these products. In the first stage, the powdered form as sold was examined for appearance, texture, flavour, odour and taste, and scores are given. In the second stage, a required quantity was mixed in warm milk to examine such attributes as taste, flavour, appearance, texture, residues/sediments and after-taste mouth feel. The panel members gave scores on a 100 hedonic scale and the mean score was then taken for evaluation and scoring.

**Stage 1 (powdered form):** Bournvita (Li'l Champs) is found to have the most acceptable taste, followed by Horlicks (Taller & Stronger) and Ensure. Protinex, found to be slightly bitter, has the least acceptable taste.

**Stage 1 (after preparation in milk):** Bournvita (Li'l Champs) is again the winner in terms of taste and is followed by Amul (pro) and Horlicks (Taller & Stronger).

In overall evaluation, Bournvita (Li'l Champs) tops the sensory table as it is found to be most acceptable in all the sensory attributes. The Champs is followed by Amul (pro), Horlicks (Taller & Stronger) and Ensure.

### The Benefits of Drinking Malt

Malt is one of the most diuretic beverages. Its carbohydrates are largely broken down and are thus easy to digest for humans.

Malt is perfectly suited as a dietary supplement in a low-protein diet.

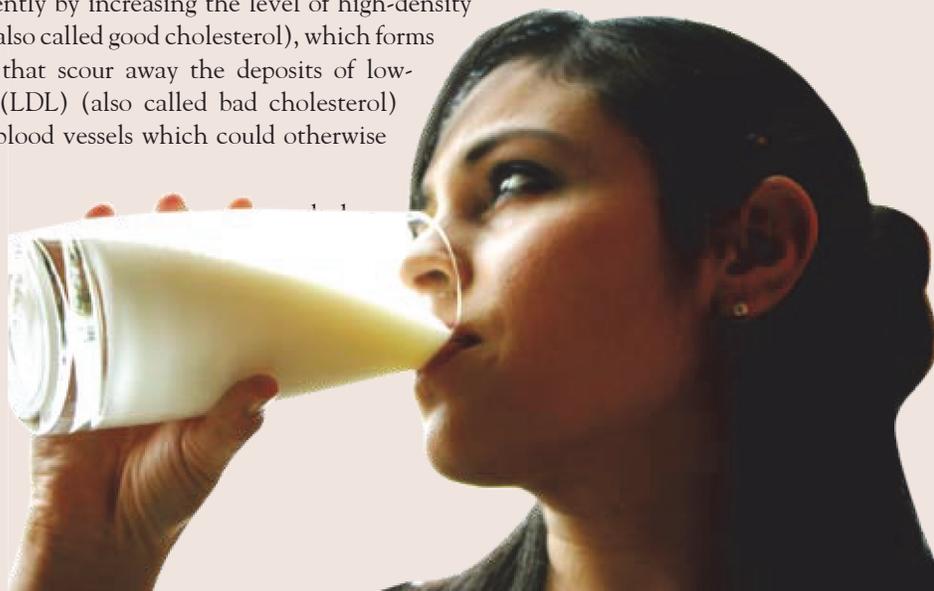
Malt contains more than 30 essential minerals and elements.

Malt contains all important vitamins including vitamins A, D and E.

One important vitamin found in Malt is folic acid, which is particularly essential for pregnant women as its deficiency can cause spinal defects in the unborn child.

Research has also shown that moderate and regular consumption of malt helps to prevent coronary heart disease, apparently by increasing the level of high-density lipoprotein (HDL) (also called good cholesterol), which forms pellet-like particles that scour away the deposits of low-density lipoprotein (LDL) (also called bad cholesterol) on the walls of the blood vessels which could otherwise obstruct circulation.

For many years, malt has been added to the diets of infants and elderly persons as nutritious supplements. An aqueous mixture of sugars and malt extract has been used very successfully as a paediatric laxative.



# COMPARATIVE TEST

## COMPARATIVE PERFORMANCE RATINGS OF HEALTH DRINKS

| Brands→<br>Test Parameters↓             | WT,<br>% | Malt-Based – for Children |                |                         |           |         |            |                        | Malt-Based – All Age Groups |           |         | Specifically Recommended* |          |  |
|---|----------|---------------------------|----------------|-------------------------|-----------|---------|------------|------------------------|-----------------------------|-----------|---------|---------------------------|----------|--|
|   |          | Complan (NutriGro)        | Horlicks (T&S) | Bournvita (Li'l Champs) | Bournvita | Boost   | Amul (pro) | Complan (Planned Food) | Horlicks (Malt-Based)       | Acti Life | Ensure  | Pediasure                 | Protinex |  |
| MRP (Rs)/net wt (gm)                    |          | 241/400                   | 171/500        | 215/500                 | 171/500   | 176/450 | 150/500    | 213/550                | 163/500                     | 145/300   | 415/400 | 459/400                   | 320/400  |  |
| Cost per serve (10gm) (Rs)              |          | 6.0                       | 3.4            | 4.3                     | 3.4       | 3.9     | 3.0        | 3.8                    | 3.2                         | 4.8       | 10.37   | 11.47                     | 8.0      |  |
| <b>1. General (Packing and Marking)</b> | 5        | 4.4                       | 4.8            | 4.8                     | 4.2       | 4.8     | 5          | 4.2                    | 4.2                         | 4.8       | 4.4     | 4.8                       | 4.4      |  |
| <b>2. Sensory Panel Tests**</b>         | 20       | 13.14                     | 14.26          | 15.25                   | 13.52     | 13.21   | 14.35      | 12.27                  | 13.24                       | 10.94     | 14.16   | 11.82                     | 8.95     |  |
| <b>3. Physico-Chemical Tests</b>        | 14       | 11.75                     | 10.78          | 10.68                   | 10.39     | 10.1    | 10.62      | 11.4                   | 10.52                       | 9.24      | 10.91   | 11.09                     | 9.6      |  |
| 3.1 Moisture                            | 1        | 0.75                      | 0.89           | 0.84                    | 0.80      | 0.93    | 0.83       | 0.77                   | 0.81                        | 0.83      | 0.77    | 0.83                      | 0.80     |  |
| 3.2 Protein                             | 6        | 5.04                      | 4.04           | 3.54                    | 3.14      | 3.22    | 3.19       | 5.1                    | 3.79                        | 3.0       | 4.76    | 4.54                      | 6.0      |  |
| 3.3 Fat                                 | 4        | 3.83                      | 3.98           | 3.79                    | 3.94      | 3.86    | 3.90       | 3.86                   | 3.92                        | 3.75      | 3.26    | 3.62                      | 1.2      |  |
| 3.4 Ash and acid-insoluble ash          | 3        | 2.13                      | 1.87           | 2.51                    | 2.51      | 2.09    | 2.7        | 1.67                   | 2.0                         | 1.66      | 2.12    | 2.1                       | 1.6      |  |
| <b>4. Nutritional Contents</b>          | 56       | 41.68                     | 41.24          | 37.58                   | 40.11     | 38.22   | 31.3       | 33.18                  | 43.62                       | 40.20     | 38.12   | 38.37                     | 43.05    |  |
| 4.1 Energy                              | 5        | 4.37                      | 3.87           | 3.88                    | 3.87      | 3.89    | 3.85       | 4.22                   | 3.77                        | 3.77      | 4.08    | 5.0                       | 4.08     |  |
| 4.2 Carbohydrate                        | 4        | 2.94                      | 3.73           | 3.87                    | 3.96      | 3.87    | 3.98       | 2.97                   | 3.77                        | 3.88      | 3.24    | 2.54                      | 2.25     |  |
| 4.3 Vitamins (A, B1, B2, C, E)          | 10       | 5.8                       | 6.59           | 6.16                    | 7.57      | 6.39    | 5.37       | 3.39                   | 9.03                        | 8.67      | 8.53    | 7.76                      | 7.32     |  |
| 4.4 Calcium                             | 4        | 2.84                      | 1.45           | 1.25                    | 1.77      | 2.37    | 2.0        | 2.15                   | 3.88                        | 3.91      | 1.79    | 2.92                      | 3.73     |  |
| 4.5 Magnesium                           | 2        | 0.69                      | 1.25           | 0.85                    | 1.07      | 2.0     | 0.76       | 0.90                   | 0.99                        | 1.64      | 0.90    | 0.93                      | 1.62     |  |
| 4.6 Iron                                | 3        | 1.59                      | 2.1            | 2.42                    | 2.16      | 0.24    | 1.36       | 0.61                   | 1.88                        | 3         | 0.34    | 0.34                      | 0.76     |  |
| 4.7 Sodium                              | 2        | 2                         | 1.26           | 1.40                    | 1.42      | 1.52    | 1.54       | 1.62                   | 1.40                        | 1.77      | 1.41    | 1.30                      | 1.79     |  |
| 4.8 Potassium                           | 3        | 2.78                      | 2.27           | 2.48                    | 2.88      | 2.54    | 2.38       | 3.0                    | 2.58                        | 2.04      | 2.60    | 2.87                      | 3.0      |  |
| 4.9 Phosphorus                          | 3        | 2.43                      | 1.67           | 1.42                    | 1.46      | 1.45    | 1.30       | 2.37                   | 1.44                        | 1.43      | 1.63    | 1.70                      | 1.96     |  |
| 4.10 Folic acid                         | 5        | 2.44                      | 5.0            | 4.22                    | 5.0       | 5.0     | 1.81       | 1.70                   | 5.0                         | 2.39      | 3.69    | 3.23                      | 4.14     |  |
| 4.11 Niacin                             | 5        | 3.80                      | 4.03           | 3.65                    | 3.17      | 2.41    | 1.43       | 1.30                   | 2.29                        | 1.52      | 3.74    | 2.24                      | 2.99     |  |
| 4.12 Total sugar                        | 10       | 10                        | 8.02           | 5.98                    | 5.78      | 6.54    | 5.52       | 8.95                   | 7.59                        | 6.27      | 6.17    | 7.54                      | 9.41     |  |
| <b>5. Microbiological Tests</b>         | 5        | 4.66                      | 3.89           | 4.95                    | 4.90      | 4.93    | 4.95       | 4.98                   | 4.91                        | 4.19      | 4.97    | 4.99                      | 4.93     |  |
| <b>Overall Score (Rounded off)</b>      | 100      | 76                        | 75             | 73                      | 73        | 71      | 66         | 66                     | 76                          | 69        | 73      | 71                        | 71       |  |

\*Specifically recommended brands where Ensure for adults esp. pre or post illness/surgery & as directed by physicians/dieticians; Protinex for protein deficiency and Pediasure for children. (Also see the Brands detailed table for recommendations). \*\*Sensory panel test includes: In powdered form as sold was examined for Appearance & Texture, Flavour and odour and Taste and after preparation in milk as Taste, Flavor/ Aroma, Appearance/ Texture, Residues/Sediments & After taste mouth feel.

Rating: >90 – Very good \*\*\*\*\*, 71-90- Good \*\*\*, 51-70- Fair\*\*, 31-50- Average\*, upto 30 –Poor \*