

PHYSICO-CHEMICAL ANALYSIS OF PACKAGED DRINKING WATER IN INDORE CITY (M.P.), INDIA

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ABSTRACT

The present study was undertaken to ascertain water quality of packaged drinking water samples in Indore city (M.P.). Water samples were collected from local market which is sold by various brand name like Bislery, King Fisher, Health Plus, Narmada, Life, Aqua care, Aqua green, SPI, Icebre, Gousen and Easeao in packed containers either bottles or pouches. Number of 11 water samples were collected and analyzed for physico-chemical parameters such as pH, Conductivity, total dissolved solids, total alkalinity, calcium hardness and magnesium hardness, chlorides, sulphate, nitrates, fluorides, sodium and potassium. None of the water samples exceeded the maximum permissible limits prescribed for drinking water.

INTRODUCTION

Water is the major constituent of all living being. Due to increasing Human Population, the water quality is deteriorating everywhere. Due to increasing human Population, the water quality is deteriorating everywhere. Consuming water is divided mainly into surface and ground water. Ground water comes mainly from seepage of surface water. Urbanization and Industrialization have adversely affected quality of drinking water, therefore continuous monitoring of water quality is necessary. One of the main causes of ill health in the under developed countries is largely the lack of safe drinking water.

Now a day bottled water (packaged) has increased both in quantity and diversity. It is easier to transport. At many places drinking water shortage has become a great problem due to failure of local water supply system and other natural causes.

MATERIALS AND METHODS

Packaged drinking water analyzed physically and chemically by Standard method of water and waste water (APHA, 1985) and practical methods for water pollution studies (Trivedy *et al.* 1986). pH, electrical conductivity and total dissolved solids were measured by pH meter, conductivity meter and TDS meter respectively. The concentration of Na and K were estimated by flame photometer. Spectrophotometer was used to determine by concentration of sulphate, nitrate and fluoride.

RESULTS AND DISCUSSION

In the present study the value of Hydrogen ions concentration ranged from 6.89 to 8.46. None of the samples of packaged drinking water for pH crossed the permissible limit (6.5-8.5) (BIS, 1998 and USEPA, 1989) (Table1).

Electrical conductance in different water samples varied from 51 μ mhos/cm, to 271 μ mhos/cm. This value are much lower than those reported by Sharma *et al.* (2005) (13.07 μ mhos/cm – 9750 μ mhos/cm) in ground water Sanganer tehsil in Jaipur, Rajasthan.

Total dissolved solids varied from 33 mg/L to 177 mg/L in the packaged drinking water samples but these values are much lower than those reported by Tripathy (2003) (551- 1245 mg/L) in ground water of Bhanjabihar, Ganjam district of Orissa. None of the water samples crossed the standard limit (500 mg/L).

Chloride concentration ranged from 20 mg/L to 44 mg/L which was much lower than standard permissible limit as 250 mg/L (WHO, 2004 and ICMR, 1975). Murugesan (2004) noted that chlorides range from 47.3 mg/L to 544.9 mg/L in ground water of East to West region of Chennai Tamil Naidu.

In the present study the values of Fluoride varied from 0.01 mg/L to 0.08 mg/L. None of the samples of drinking water exceeded the permissible limit (1.0-1.5 mg/L recommended by ICMR, WHO and BIS. (Table 2).

The concentration of total hardness ranged from 4mg/L to 148 mg/L which was much lower than standard permissible limit that is 300mg/L (BIS, 1998). This range is much lower than those reported by Prasad (2003) (132 mg/L to 664 mg/L) in the sub-surface of water of Vijaywada city.

The value of Magnesium and Calcium were recorded within the range of 0.24mg/L-19.92mg/L and 3mg/L-66mg/L respectively and did not cross the permissible limit of WHO, 2004. While Fokmare and Mosuddiq (2001) recorded the higher values of Magnesium hardness (53 mg/L to 104 mg/L) in the ground water of Akola, Maharashtra.

In the present study the value of nitrates ranged from BDL to 0.0108 mg/L. This range is much lower than those reported by Prasad (2003) (132 mg/L to 664 mg/L) in the sub-surface of water of Vijaywada city.

In the present study the values of Sulphate varied from 22 mg/L to 45 mg/L. While other author recorded the higher values of sulphate such as Tripathy (2003) (21.61 mg/L to 98.46 mg/L) in ground water of Bhanjabihar, Ganjam district, Orissa.

The values of Sodium and Potassium ranged from 12 mg/L -40 mg/L and 1.0 mg/L to 4.0 mg/L respectively in the drinking water.

Carbonate was observed in only two samples varying from 14mg/L to 16mg/L. Bicarbonate and total Alkalinity ranged from 38mg/L to 240mg/L and

38mg/L to 256mg/L respectively in the packaged drinking water.

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WATER QUALITY STUDIES ON BOMMANAHALLI LAKE

Table 1.

