



Bacteriological studies on Purna river water at Asegaon Purna with reference to *coliform* from Amravati District, MS, India

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ABSTRACT

Freshwater bodies are the major and good source of potable water due to the purification property of water. But due to the increased amount of discharged sewage, industrial waste, increased urbanisation and agricultural activities. Water quality is affected day by day, hence, present investigation is undertaken for Purna river at Asegaon Purna and present study revealed the presence of bacterial contamination of *Escherichia coli*. Monthly samples were taken during August 2015 to September 2016. Bacteriological analysis and its presence of *Escherichia coli* is confirmed by MPN method using presumptive confirmatory and completed test. Dark water colonies with metallic shine on Eosine methylene blue (EMB) agar confirm the presence of faecal coliform as samples were taken from same spot throughout the year. All samples show the contamination of *E. coli* in different ranges.

Keywords: Coliform, *Escherichia coli*, River water, faecal bacteria.

INTRODUCTION

Water is an important component of life but microbial contamination of freshwater is usual because of infiltration of water which contains faeces of a human and animals. So, purpose to study the contamination of water was to establish the suitability of the water body. For drinking as well as for other uses as large proportion of world's population do not have access to microbiologically safe sources of water for drinking and other essential purposes WHO (2000). But for the river water is susceptible to contamination with micro-organisms and other pollutants. The contamination like coliforms, *E. coli* are the indicators of the presence of pathogenic organisms such as diarrhea, dysentery and other gastroenteritis is highly endemic (Clasen *et al.*, 2007).

Freshwater is finite resource essential for agriculture industry and even human existence, without freshwater of adequate quantity and quality

sustainable development will not possible. Rivers play a major role in assimilation or carrying off of municipal and industrial waste water and run off from agricultural land the former constitutes the constant polluting source whereas the latter is a seasonal phenomenon with the rapid development in agriculture, mining, urbanisation, and industrialisation activities, the river water contamination with hazardous waste and waste water is becoming a common phenomenon. Many people die due to contamination. hence, present studies on microbiological analysis of water was undertaken to check the bacteriological quality of river water.

MATERIAL AND METHOD

Collection of sample

Monthly samples were collected from the spot Asegaon Purna during August 2015 to September 2016. The bacteriological analysis of collected water samples were carried for the presence of coliforms *E.coli* determined by using methods as recommended by a APHA (1998). The microbial analysis like the numbers of bacterial and fungal colonies were measured by the standard plate count (SPC) method using standard nutrient agar. Microbial analysis of river water samples were studied within 24 hrs of collection. Bacterial colonies were counted by colony counter method and analysis of coliform bacteria was done by most probable number (MPN) method.

The bacteriological analysis of collected water samples were carried out for the presence of coliforms. *E. coli* was determined by using methods as recommended by APHA (1998). The microbial quality of river water samples were assessed by making use of the most probable number method (MPN/100 ml). total coliforms were estimated by using 6 tube most probable number (MPN) method. Double strained and single strained MacConkey broth was used for the presumptive tests. the tubes of MacConkey broth were inoculated by samples and incubated at 37°C for 24 hrs. well isolated colonies were selected and subcultured it on nutrient agar and nutrient broth. The gram staining was performed by using 24 hrs old cultures from nutrient agar plate and motility was performed by using nutrient broth culture and coliforms were confirmed by the growth of pink colour colonies.

RESULT AND DISCUSSION

In the present investigation, microbial analysis the bacteria coliform ranges from 6100 to 11900 CFU/ml. The highest bacteriological count was observed in the month of may and lowest count during the November month is 6100 CFU/ml. highest value shows the more contamination and lowest value show the low contamination of water during the month shows the different ranges.

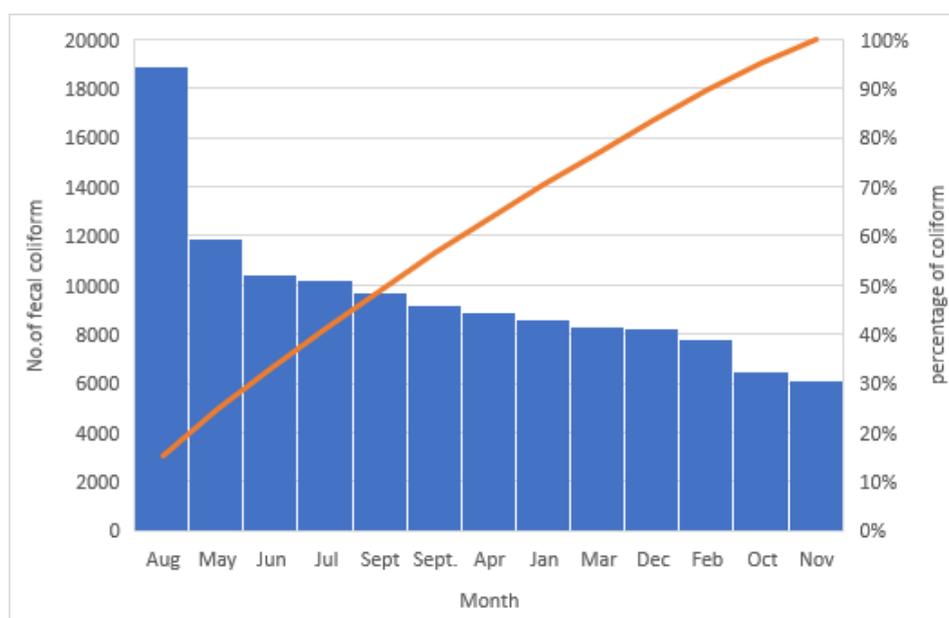


Fig. 1: Showing the presence of faecal coliform bacteria in Purna river water at Asegaon Purna during the year 2015-2016.

Among the coliform only faecal coliform bacteria were observed for the study. It is the common practice for the local people living along the river catchment to discharge their domestic and agricultural wastes as well as human excreta and wastes in to the rivers which results in to the contamination according to a study of Baxter and Gilliland (1998). Wild and domestic animals seeking drinking water can also contaminate the water through direct defecation and urination according to Karikari and Ansa-Asare (2006).

CONCLUSION

The proposed research study presented a bacteriological analysis of Purna river water at a particular spot of Asegaon purna of Amravati district. The presence of coliform bacteria shows the contamination of water and it conclude that this water is not potable for drinking and any other domestic purpose therefore, the river water need to be protected from outside contamination.

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