Microbiological analysis of water of river Lumëbardhi (Kosovo) during spring season 2012

Idriz Vehapi, Kemajl Kurteshi

University of Prishtina – Kosovo

Abstract

The objective of this study is to assess the quality of water, of the river Lumëbardhi during spring season, 2012 year, through the microbiological analysis. River Lumëbardhë located in south - west part of Kosovo, who pass through the city Prizren. Samples for microbiological analyses are collected in three localities along the river. Microbiological analysed parameters are: Total coliform bacteria, SS(Salmonella and Shigella), Heterotrophic, Streptococcus faecalis and Fungi. According to the bacteriological analysis show that waters of river are polluted microbiologicaly. The river section examined during these investigation, demonstrate the river water belongs to the second class of quality.

Keywords*: technique, plate, microbiological, analysis, water.*

Introduction

Water of good drinking quality is of basic importance to human physiology and man's continued existence depends very much on its availability (Lamikanra, 1999; FAO, 1997). The provision of portable water to the rural and urban population is necessary to prevent health hazards (Nikoladze and Akastal, 1989; Lemo, 2002). Before water can be described as potable, it has to comply with certain physical, chemical and microbiological standards, which are designed to ensure that the water is palatable and safe for drinking (Tebutt, 1983).

The original source of any drinking water is rich in aquatic microbes, some of which could be dangerous if they enter the human body. Accordingly, the treatment of water for drinking involves stages where microbes are removed or destroyed before the water gets into homes.

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After purification the water is subjected to tests by bacteriologists to ensure the safety for human consumption. A long series of dilutions is not necessary by some sample because most water supplied are fatty low in bacteria content, while others require long series of dilutions (Fawole and Oso, 2001).

Materials and methods

Samples for bacteriological analyses are collected in sterilized bottle (100 mL) at the depth of 10 -20 cm under the water surface. The samples taken at four localities along the river. The media used for the bacteriological analysis of water include nutrient agar (NA) for heterotrophic bacteria, Violet red bile agar total for coliform bacteria, Bile aesculin Agar for Streptococcus faecalis, SS-agar for Salmonella and Shigella, and potato dextrose agar (for fungi). All the media used were weighed out and prepared according to the manufacture's specification, with respect to the given instruction and direction. The collected samples seeded to selective nutrient agar for each species of bacteria. Culture incubated at 37 °C, while the fungi incubated at room temperature, 20°C, for 5 days.

Results and discussion

All the samples showed presence of microbes with a total coliform bacteria, heterotrophic bacteria, Streptococcus faecalis, Salmonella and shigella, Fungi.

The microbiological analysis of the water of the river Lumbardhi presents in Table 1.

Total coliform bacteria at first locality was 41 cfu/10 ml water, while at third locality it was 167 cfu/10 ml, which was higher than the recommended value.The higher number of Streptococcus faecalis detected also at third locality (336 cfu/10), while the lower number of bacteria detect at first locality (54 cfu/10)

The lower number of Salmonella and shigella (12cfu/10) is registred in first locality, while the higher number it is registred at third locality(57 cfu/10).

The higher number of fungi is registred, at third locality (96 cfu/10 ml), while the lower number is registred in first and first locality (6 cfu/10)

The higher number of heterotrophic bacteria registered at third locality(450 cfu/10 ml), while at first locality registered lower number(158 cfu/10 ml).

Table 1. Microbiological analysis of waters of the river Lumbardhi, during spring season, 2012 year

Group of microorganism	Amount of analysed water	Locality 1	Locality 2	Locality 3
Heterotrophic bacteria	10 ml	158	390	450
Total coliform	10 ml	41	94	167
Streptococcus faecalis	10 ml	54	124	336
Salmonella and shigella	10 ml	12	43	57
Fungi	10 ml	6	21	96

The presence of coliforms group in this water samples generally suggests that a certain selection of water may have been contaminated with faeces either of human or animal origin. Other more dangerous microorganisms could be present (Richman, 1997).

Conclusion

Higher contamination of the drinking water with bacteria and fungi was detected along the river samples collected from different localities.

Based on achieving results led us to conclude:

- The waters of water of river “umbardhi” it is higher polluted by bacteria at all locality.
- Registred the higher number of all microorganism, at all locality, notably in third and second locality.
- On base of coliform bacteria according to Tumpling system the waters of “Valbona” river belongs at third class of pollution.

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