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Final Report on

**WATER QUALITY TESTING AND  
PURIFICATION USING ACTIVATED  
CARBON MATERIALS**

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## Introduction

As part of the social commitment, we have conducted an in-depth research on the in-stream running water of one of the important local canals in Chalakudy (one of the important sub-urban regions of Thrissur district in Kerala) municipal region. It is considered as one of the biggest canals at this location and the water in this canal is affecting the living conditions of many people at the nearby houses. Our study is essentially focused on the normal water quality of the canal water and the results were highlighted before and after purification of the water.

The sampling was done by collecting the water samples from different parts of the canal. The water sample was purified by the traditional method of passing it through tight packed activated carbon materials taken in 300 X 30 mm column chromatography Borosil glass tube. Activated carbon was filled 20 cm in length in the tube. A single packed column was used to collect 250 ml of water each time.

It was observed that the quality of water was tremendously improved after passing through the AC. The presence of coliform (E-Coli) bacteria, metal ions like iron, etc. were eliminated after the purification process. It was found that the other mineral ions such as ammonium, chloride and nitrites and fluorides are either eliminated or decreased from its original quantity. It is also noted that the other water quality parameters were found to be normal after purification and the water became drinkable. A detailed study of the water quality parameters before and after purification is summarized in the table 1.

Table 1. Water quality parameters before and after purification. All the parameters were measured at room temperature.

No	Water quality parameters	Recommended level	Impure water	AC materials used	
				Activated Charcoal	Phosphate free AC
1	Ca hardness		10 ppm	Nil	5 ppm
2	E-Coli	9 mpn	Present	Absent	Absent
3	Nitrate	< 10 ppm	10 ppm	Nil	50 ppm
4	Nitrite	< 0.2 ppm	1 ppm	Nil	0.1 ppm
5	Ammonium	< 0.1 ppm	0.1 ppm	0.02 ppm	0.02 ppm
6	Residual Chlorine	< 0.1–0.3 ppm	0.5 ppm	Nil	Nil
7	Fluoride	< 1 ppm	1 ppm	Nil	1 ppm

In conclusion, the Chalakudy Municipal canal water was found to be impure and the level of coliform bacteria is very high. We proved that the water can be easily purified by traditional method of activated charcoal adsorption. The other water quality parameters are also found to be controlled after purification with ACs.