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Determination of Genotoxic Pollution of Some Hospital Wastewater with Salmonella Ames Test

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ABSTRACT

Wastewater of hospitals contains materials that would be a threat to alive. These water needs to be checked by a biological purification before leaving to nature. Hospital wastewater has differences than domestic waste because of especially blood, body waste, drugs, chemicals, medical device waste and radioactive materials. We aimed to determine genotoxic effects of total pollution in hospital wastewater on alive by Salmonella microsome test method. In this study, we decided on three hospitals which weren ' t checked as biological purification of waste. The samples were taken for six 1-week periods between March 2009 and June 2009. Mutagenite studies of samples taken from hospitals were made with ,*Salmonella typhimurium* TA 98 and TA 100. Wastewater samples were evaporated. 27 different test materials were prepared using DMSO, ethanol and acetone solvents, two different MGA plaques were used for each test material. Each experiment was made for 3 times with known results of mutagens and we made it ready for " Ames " test method. We had genotoxicity 50% in Istanbul University Medical Faculty Hospital, 56% in Haseki Hospital and 61% in Vak?f Gureba Hospital. According to three hospitals result there are 9 positives, 9 negatives in DMSO; 9 positives, 9 negatives in ethanol; 12 positives, 6 negatives in acetone. These values are totally 56%. Our results give important information about mutagenic effect of total pollution in hospital wastewater. It is first time researched in Turkey that effect on DNA of pollution is from hospital wastewaters. In prospective studies, it is necessary to use this system as a method to monitor mutagenic genotoxic pollution in hospital wastewaters. These kinds of studies present applicability and importance of our method because of placing in the literature. Method constitutes a new approach to check mutagenite of pollution in hospital wastewater.

KEYWORDS

Hospital Wastewater; Ames Test; TA 98; TA 100; Genotoxicity

Cite this paper

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