The effluent generated by health care establishments (hospitals and diagnostic laboratories) falls into the category of hazardous substances, as it contains large number of toxin chemicals, which are uncertain to be measured.

Generally these toxic effluents are discharged directly into urban sewerage network without partial treatment. In present study, the genotoxicity and mutagenicity of (i) Untreated liquid effluents generated by the important hospitals and diagnostic laboratories and (ii) treated effluent from different stages of WTP by incorporating invitro Ames test, SOS chromotest microtitter plate assay and chromosome aberration were studied.

The finding of present study, strongly suggest that all the Health centers; hospitals and diagnostics laboratories should released their wastewater effluents after proper treatment, so the contamination of environment may be avoided. This study to compare and evaluate the genotoxicity of health care establishment’s wastewater has brought the following conclusions:

- Result of physico - chemical characterization of untreated wastewater from each health centers has declared them unacceptable and unbearable to be discharged directly into the urban sewerage network or aquatic ecosystem environment.

- Untreated wastewater from government hospital, private hospitals (PH- I and II) were observed strongly genotoxic in Ames bioassay, SOS-Chromotest and cytogenetic in chromosome aberration. While effluents from diagnostic laboratories were evaluated slightly genotoxic in each assay.

- Treated wastewater from WTP (Wastewater Treatment Plant) of Private hospitals - I and II were effective in removing genotoxins proved in all assays.

- Thus, it infers that government hospital is releasing highly genotoxic effluents directly into the public sewers. Although diagnostic laboratories I and II are also discharging their toxin effluents into the environment without treatment.
The present research on health centers wastewater develops a preliminary stage of work on evaluating the genotoxicity and cytogenetic potential. Extensive monitoring programs would further be performed in order to discover possible sources of genotoxic and mutagenic substances. Further, the factual knowledge about the compounds responsible for toxicity should be studied.

Physico-chemical characterization and toxicological evaluation of treated effluents released from both the WTPs of private hospital I and II completely fortify us for further using it for washing, cleaning, gardening purpose.

Comparative assessment of short-term microbial bioassays performed in present study revealed Ames test, SOS Chromotest and chromosome aberration bioassays were found successful in evaluating genotoxic potential of health centers effluent.

Chromosome aberration bioassays helped us to evaluate the toxicity of health centers waste water in terms of cytogenetically.

Being simple, quick, sensitive, cost effective and relatively easy to perform, short term bioassays can assess harmfulness of effluents conveniently. The bioassays employed in present study can be used as monitoring tools for screening of waste water to assess the mutagenicity of wastewater. Specific information on genotoxicity and ecotoxicity are needed to allow the incorporation of toxic parameters in regulatory framework.

These bioassays also helped us to understand possible mechanisms regarding mutagenesis carcinogenesis and cytogenetically.

The *in vitro* data presented in study suggest that health centers wastewater are the source for DNA-damaging or mutagenic compounds. Chromosome aberration helped us to provide prudent evidence of carcinogenic potential.

*Invitro* SOS chromotest and Ames assay helped us for evaluating the efficacy of both Hospital Treatment Plants in special reference to genotoxicity.
The untreated hospital liquid waste of GH, PH-I and II are potent genotoxic
have been significantly proved in assays.

The treatment processes such as Filtration, Aeration, Activated carbon filter
and chlorination helped in reducing the mutagenicity of hospital liquid waste.

An Advanced and efficient on-site treatment plants for treatment of health
centers effluent is necessary for reducing the risk to the environment and
human health which may caused by toxic substances present in the effluent.

To make country free from contamination of these hazardous effluents
government authorities should implement national guidelines, outreach
program and scientific awareness toward safe disposal of effluent of health
care centers which may ensure the safety of people and environment.