



## RESEARCH ARTICLE

### EVALUATION OF TOXICITY OF PHARMACEUTICAL EFFLUENT BY POT AND FISH ASSAY METHOD

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#### ABSTRACT

In India population of humans are increasing day by day .In accordance with this huge population Indian government giving the all the fundamental needs for each particular person such as food, shelter and medicals facility. For increasing the status of human beings government will developing such strategies that include the prophylaxis against various disease. So, pharmaceuticals company will producing such huge products from tablets, syrups and salines. During the production of such pharma preparation heavy organic load pollutants are discharged out of the industry. Such effluents when exposed towards environment it will pollute the ground water as well as the ecology of that site will totally disturbed. These effluent samples are also consist of different solvent systems used for the downstream processing purposes in industry. Solvent in its pure form are volatile but when mixed with organic solute they are non volatile. Such industrial effluent was obtained, from MIDC, Waluj, Aurangabad. When subjected for GC-analysis it was found that the effluent sample were consist of 26% concentration of n-hexane ( $\log P_{ow}$ ) value was 4.26.

**Key words:** Bioassay, toxicity of n-hexane, Pharmaceutical effluent.

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#### INTRODUCTION

In India industrial development arises the environmental pollution .for governing the pollution of these industries there are various governmental agencies are in present scenario. These agencies making laws and various act for the discharge of environment friendly effluent of the industries which helps to protect their environment from various hazards. But these rules and amendments are not obey by these industrial groups and hence a major pollution i.e. water pollution caused by the these industries. So in India various types of the water born disease were caused due to these pollute water bodies. Amongst such industries for water pollution mainly pharma industries are responsible to do so.

#### METHODS AND MATERIALS

There are two methods are applied for the calculation of effluent toxicity.

**A) Fish assay method:** For this type of assay the locally used fishes daily for eatin purposes were collected from

Pravarasangamrever and brought to laboratory as early as possible in aerated distilled water glass jar. Then these fishes were transeferd to fish pond which consist of tap water and continuous flow of air with help of electric sparger. Then for upto eight days a constant feed and aeration was provided to these fishes and after eight day the experiment was started. In this experiment the effluent sample as it is and dilution of effluent such as 10%, 25%, and 50% were used and along with distilled water as an control. Before adding the fishes the aeration rate was maintained at 132 bubbles per minutes, 20 granules of fish food after each 2 hrs. The pH of effluent was not adjusted at neutrality. Simultaneously another experiment was set in that only the dilution of effluent i.e. at level of 5% used and the pH of effluent was adjusted at 7. To know, is the pH only influencing the death of fishes.

**B) Pot assay:** in this experiment the seeds were selected and also well fertile soil from the botanical garden was used for this experiment. different dilution of effluent were used viz.10%,25%,50% and effluent as it is ,tap water as control used. simultaneously 5% diluted effluent pH adjusted at 7 and control as an distilled water used.

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**Fig. 1. Photograph showing the effect of effluent at various dilutions . from left to right first one is test 03(10%),02(50%),03(25%) and control as distilled water**



**Fig. 2. Photograph showing the effect of effluent sample and their various concentration such as 10%,25%,50% and control as an tapwater showing the germination of seed in pot assay method**

### Observations for fish assay

Following are the observations for the fish assay, it is clearly seen that as we dilute the original effluent sample such as 10%, 25% and 50%, not a single fish ready to survive in this diluted as well as original effluent.

### RESULTS AND DISCUSSION

In this toxicity evaluation studies by using fish and pot assay it is clearly observed that,

- A) Fish Assay result,** all of above beakers consisting of 1000ml of respective diluted i.e. 50% to 10% does not support the growth of fishes, but in control both fishes survive more than 24hrs. hence we conclude that the selected effluent sample is badly pollute with various organic as well as in inorganic material, which responsible to raise hazardous effect on environment and ecosystem. So effluent needs remedies for their treatment.
- B) Pot assay:** Similarly pot assay was also predicts the same results to that of fish assay. Diluted effluent sample from 50% to 10% dilution, was used for the growth of seeds of wheat, in control we suppose to add only distilled water, in all test seeds were not convert to their seedlings and hence effluent really needs a remedy for their safe discharge in nature or ecosystem.

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