

## MUTAGENICITY ASSESSMENT OF AQUATIC PRIORITY CONTAMINANTS

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### Abstract

The purpose of this work was to evaluate the mutagenic activity of ten priority compounds that were identified in the Danube River Basin in Europe for the construction of a database. The protocol used is a new miniaturization version of the Salmonella/microsome mutagenicity assay, called MPA (Microplate Agar), using TA98 strain. The ten compounds tested were negative for TA98, with and without metabolic activation (S9), except benzo(a)pyrene (BaP), which was positive in the presence of S9, as expected.

**Key words:** Mutagenic, Compounds, MPA

### Introduction

From the thousands of compounds identified in the Danube River, ten were selected as priorities. Most of them hadn't yet been tested in the Salmonella/microsome assay (Ames test). Therefore, it's necessary to check their mutagenicity, except for Benzo(a)pyrene (BaP) which is already recognized as a mutagen.

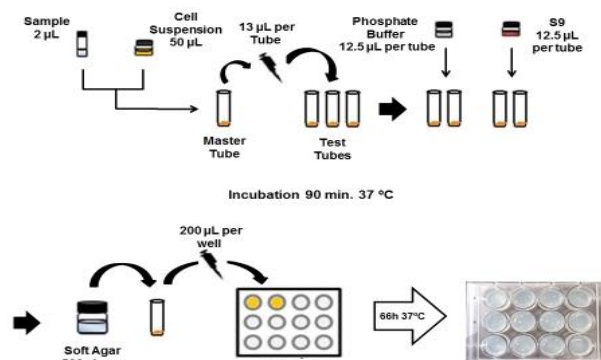
The objective of this work was to test the selected compounds using the mutagenicity assay MPA (Microplate Agar), with TA98 in the presence and absence of S9. This protocol is a miniaturization assay, which uses less sample, materials and reagents.

The last part of this project was to test a mixture of the priority compounds to simulate the proportion in which they occur in the studied river, and thus to verify possible synergistic effects.

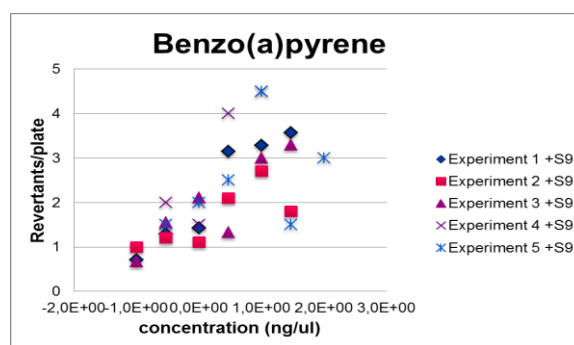
### Results and Discussion

Ten compounds considered as priority compounds in the Solutions project, have been tested. The protocol used is a recent version of the Salmonella/microsome mutagenicity assay, MPA (Microplate Agar). This protocol is a miniaturization assay, which uses less sample, materials and reagents (Figure 1).

The compounds Diazinon, Diclofenac, Bisphenol A, Triphenylphosphate, Diuron, Chlorophene, Propiconazole, Genistein and Triclosan were negative in the absence and presence of metabolic activation (S9). Only Benzo(a)pyrene (BaP) was positive in the presence of metabolic activation (S9), as expected (Figure 2).



**Figure 1.** Diagram depicting the steps involved in the miniaturized protocol - MPA.



**Figure 2.** Results obtained for Benzo(a)pyrene (BaP)

### Conclusions

The ten compounds tested and a mixture of the compounds were negative for TA98, with and without metabolic activation (S9), except benzo(a)pyrene (BaP), which was positive in the presence of S9, as expected. We observed the importance of performing different independent tests to characterize the mutagenicity highlighting the advantages of the miniaturization protocol.

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