

## Poster

# Isolation and characterization of emerging pollutant-degrading microbial consortia from WWTPs



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## ABSTRACT

**Motivation:** The increase of emerging pollutants, and the environmental and health hazard they pose, has created the need to research possible degradation mechanisms for them. One method is the use of bacteria able to biodegrade such compounds[1]. For that, wastewater treatment plants (WWTPs) could be considered a suitable starting point, as many emerging pollutants are collected there, and even partially degraded, before they, through WWTP outputs, end up accumulating in water bodies and nearby lands[2]. It is also essential to identify -with as much details as possible- the bacteria taxonomy and potential enzymatic pathways involved in the process. In this project, previously enriched bacterial consortium cultures are analyzed, in order to determinate their composition, and try to isolate their components as much as possible while still being able to biodegrade the chosen pollutants.

**Methods:** Enriched cultures containing either naproxen-degrading or ibuprofen-degrading consortia were used, in order to determinate their growth rates and ability to degrade the contaminants. For that, consortia were grown on flasks, with the chosen compound (naproxen or ibuprofen) as the sole carbon source. In addition to measuring their absorbance at 600nm to monitor their growth, small samples were analysed by HPLC[1],[3], which allowed us to know the velocity of degradation. In addition, further isolation of each consortia was carried out in petri plates, and the 16S rRNA region of both consortia formations and isolated colonies was amplified and sequenced.

**Results:** The data obtained indicate that it is necessary to form consortia to grow in the presence of naproxen and to biodegrade it. Different consortia have been isolated in petri plates, and sequencing of the 16S rRNA has shown the prevalence of the *Achromobacter* genus in both naproxen- and ibuprofen-degrading culture isolates.

**Conclusions:** WWTP isolated bacteria are able to form emerging-contaminant biodegrading consortia. Further study is needed in order to optimize their growth rate and propose a metabolic pathway for ibuprofen and naproxen degradation.

## REFERENCES

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