

We are still working on the last term of the european Project HypoTRAIN from the Marie Curie Actions ITN financed by the EU.

HypoTRAIN Hyporheic Zone Processes – A training network for enhancing the understanding of complex physical, chemical and biological process interactions.

The aim of this on-going experiment *Roll of rhizosphere created by hydrophytes in organic fibre in terms of bioremediation* as the PhD work of Sheela Paramjothy employed for Naturalea in the european project HypoTRAIN, aims to collect and assess the allelochemical compounds in the exudates released by the macrophytes. The species currently in assessment are *Iris pseudacorus*, *Phragmites australis* and *Typha latifolia*, specie commonly used in bioengineering purposes and also used in flume experiments for the Urban River Lab facilities.

These works will allow us to know the action of plants in the biodegradation of medicines increasingly present in wastewater.

Our current hypothesis suggest that different species would have different compositions of allelochemical and we would like to characterize the composition of the root exudates for each different species.

The specimens were sterilized prior to transplanted into sand-filled columns. A lanolin-paraffin mixture is used to seal the plants placed in the columns. The macrophytes were then exposed to 16:8 hours light conditions in a room temperature (24°C) and humidity levels varying from 30% to 45% daily. The macrophytes are irrigated with 1:4 Hoagland (1962) solution through an irrigation sprinkler once every week and with sterilized distilled water every three days to avoid accumulation of mineral deposits on the root surface. The columns were also covered in opaque plastic material to hinder the growth of nutrient rich conditions. Irrigation tubing and workspace are sanitized daily with 70% ethanol mixture prior to any handling with the columns.

The root exudates will then be able to be extracted through an extraction tube located at the bottom of the column, filtered and stored in the temperature below 20°C prior to analysis.

From this trial run experiment, we hope to identify problems and suitability of the macrophytes selected, before we expand the numbers of columns for a better assessment of the root exudates. The initial result could shed light into possibility in expanding the experiments that may involved introduction pharmaceuticals, hydrocarbons or inoculation in the columns to assess the opportunity in manipulation of the conditions of the rhizosphere and how this could affect the qualitative and quantitative values of the root exudates.



On the left, macrophyte has been transplanted into the sterile column. On the right, it can be observed that the macrophyte roots are placed beneath and surrounded by the irrigation tubing (silver tube), prior to being covered by sand.



On the left, lanolin-paraffin mixture is used to seal the macrophyte. On the right, the column is covered in an opaque plastic material to hinder algal growth.



Assembly of the irrigation and extraction tubings.