Phytoremediation of metals and pharmaceuticals by estuarine specie *Juncus maritimus*

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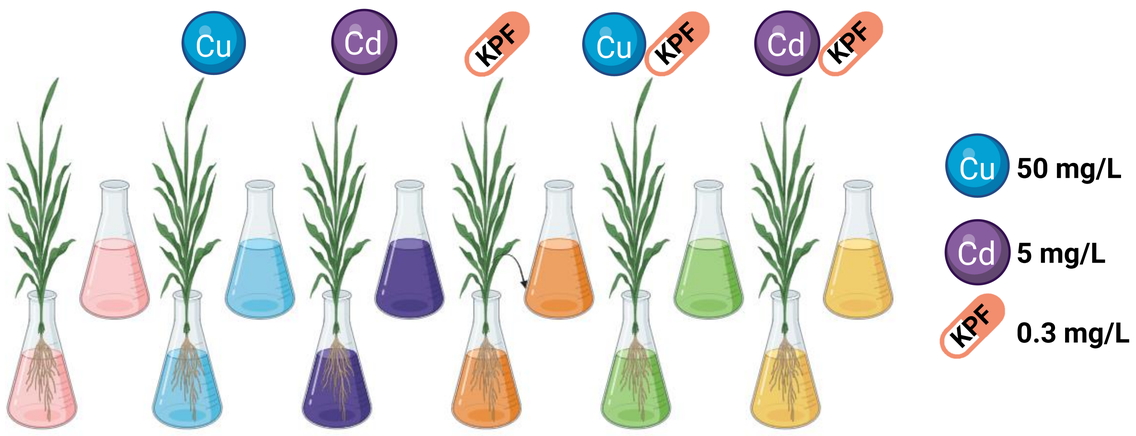
INTRODUCTION

- Estuaries are very important areas offering several ecosystems services
- But they suffer anthropogenic pressures, increasing pollutants levels in these areas such as pharmaceuticals and metals
- Therefore, pollutant removal strategies are needed, with phytoremediation being a possible solution[1]

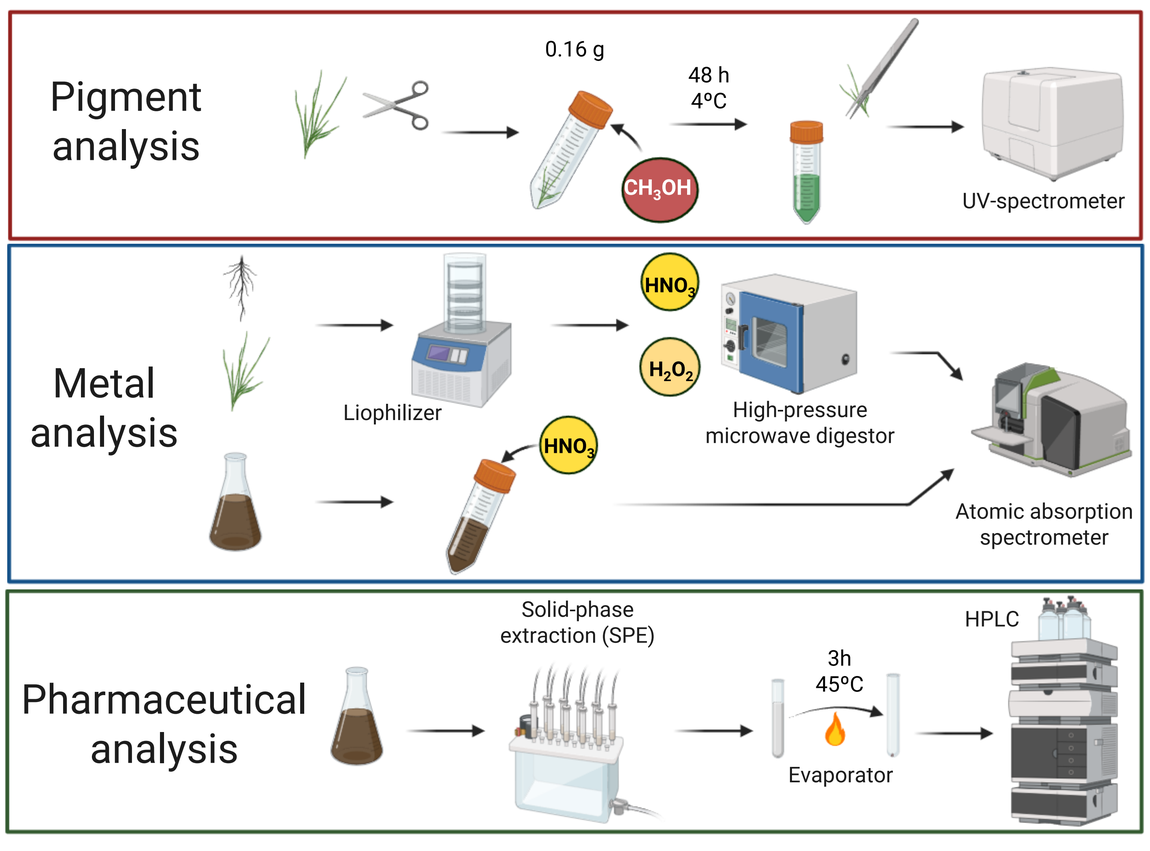
The aim of this study was to evaluate the phytoremediation potential of the saltmarsh plant *Juncus maritimus* for the removal of the pharmaceutical ketoprofen (**KPF**) and metals (**copper** and **cadmium**), either alone or in a mixture

MATERIAL AND METHODS

- Plants and estuarine water were collected from Lima River Estuary (Portugal)
- Elutriates were prepared accordingly to EPA protocol[2] (shaking 50 g of sediment with 200 ml of estuarine water in each flask, settling for 24 h and filtration through 0.45 µm filter)
- Five treatments:

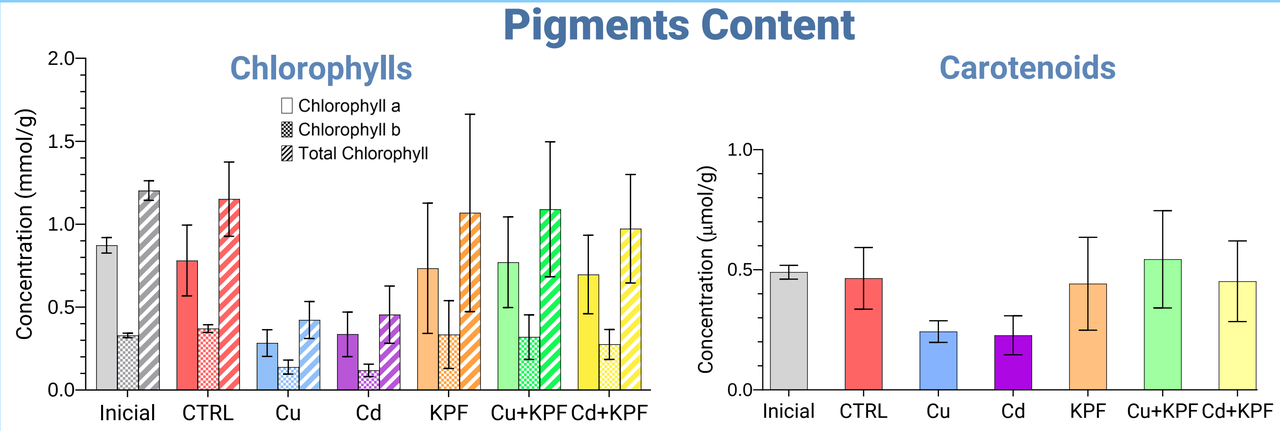


Metals → Doped only once at beginning
Pharmaceutical → Doped 3 times (every two day)



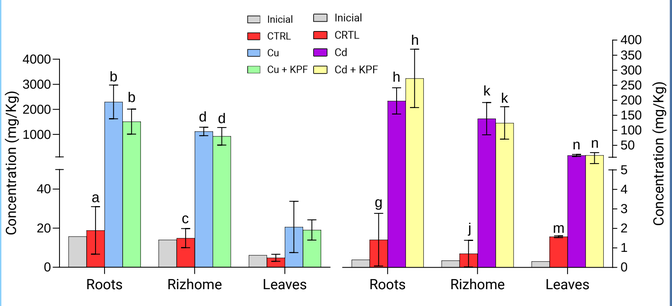
RESULTS

Pigments Content

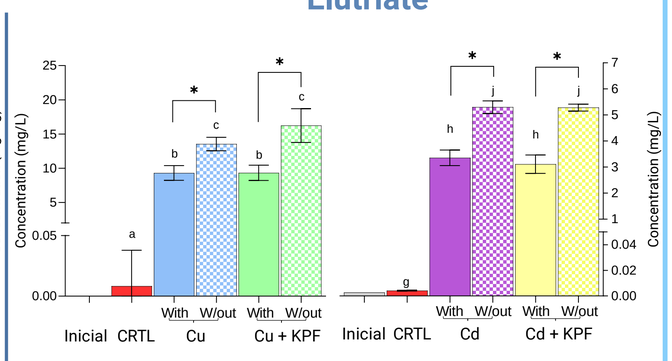


No significant differences between the treatments with KPF, nor with the initial plants.
Metals alone slightly decrease pigments content

Metal Content

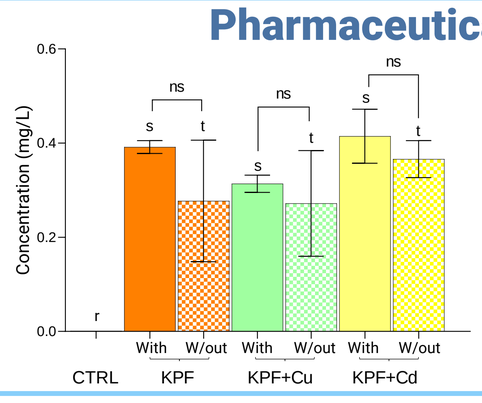


Significant differences between CTRL and the different treatments
No significant difference between metal and Metal + KPF



Significant differences between CTRL and the treatments
Significant differences between the presence and absence of plants in the different treatments

Pharmaceutical Content in elutriate solution

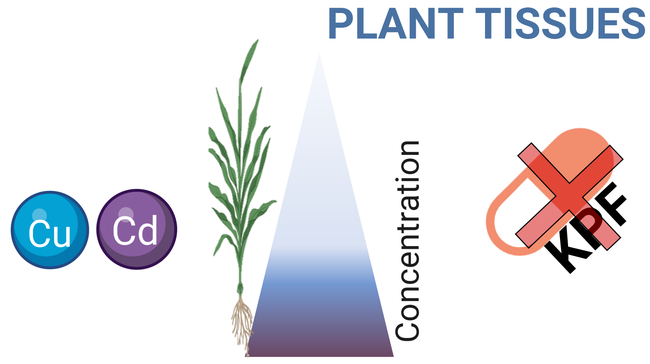


Significant differences between control (CTRL, no contaminants) and the different treatments (with and without plants)

No significant differences between the presence (With) and absence (W/out) of plants in the different treatments

CONCLUSIONS

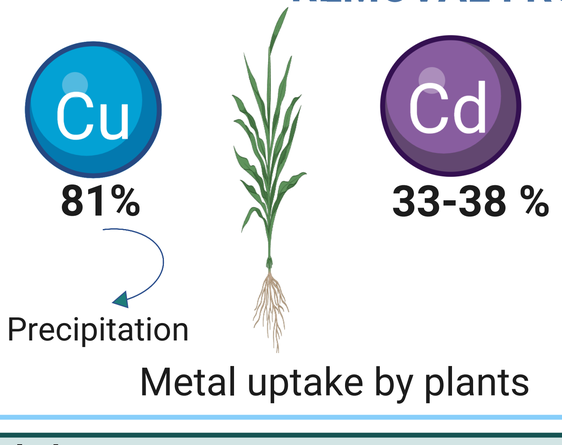
PLANT TISSUES ACUMULATION



No effect of contaminants exposure on the different pigments, when KPF was added

Translocation of **metals** throughout the plant. No effect of **KPF** on removal

REMOVAL FROM ELUTRIATE SOLUTION



No Removal by the plants, with the added concentration being found in the elutriate solution

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References

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