

# Development of a methodology for quantification of pharmaceuticals and personal care products in hydric media

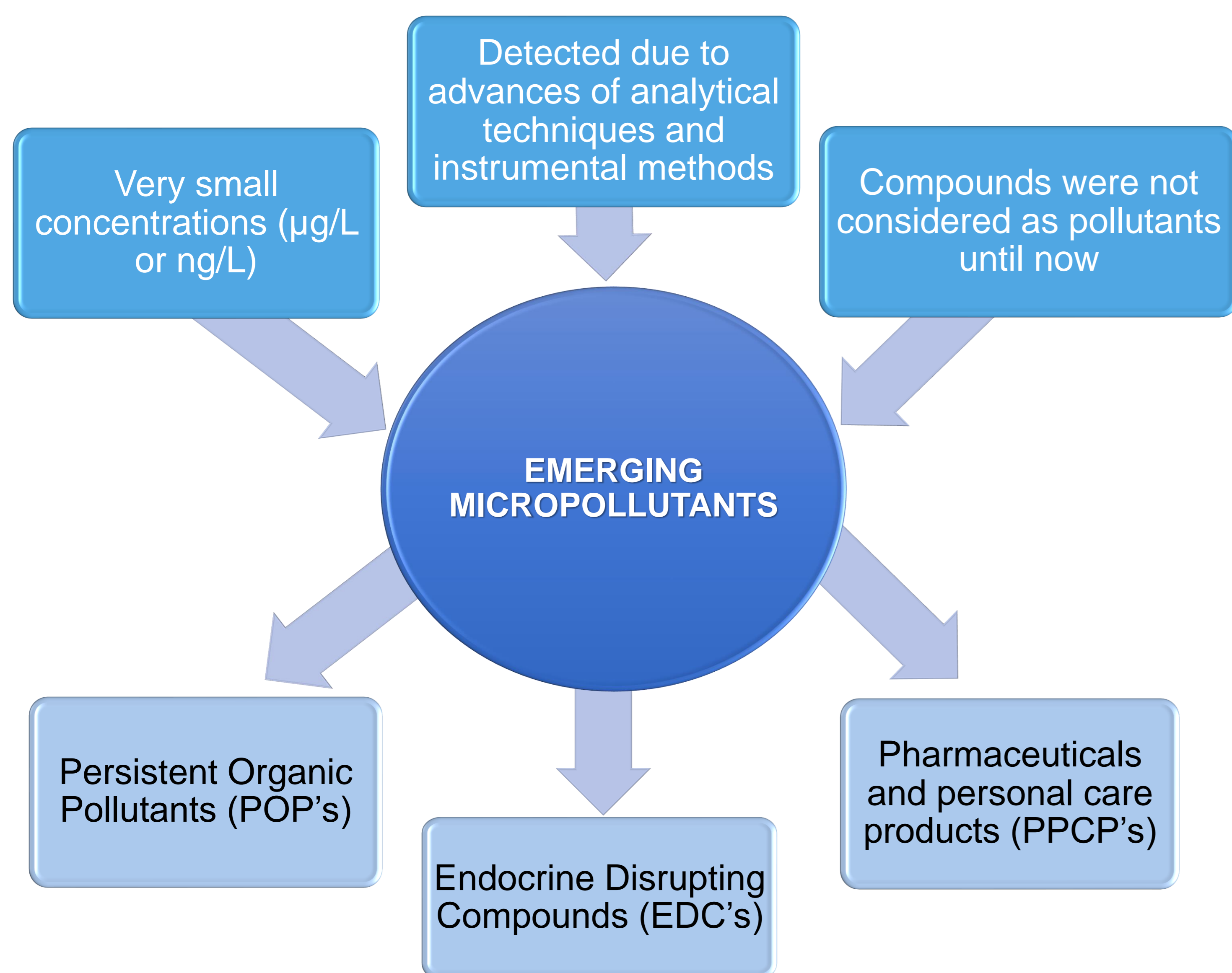
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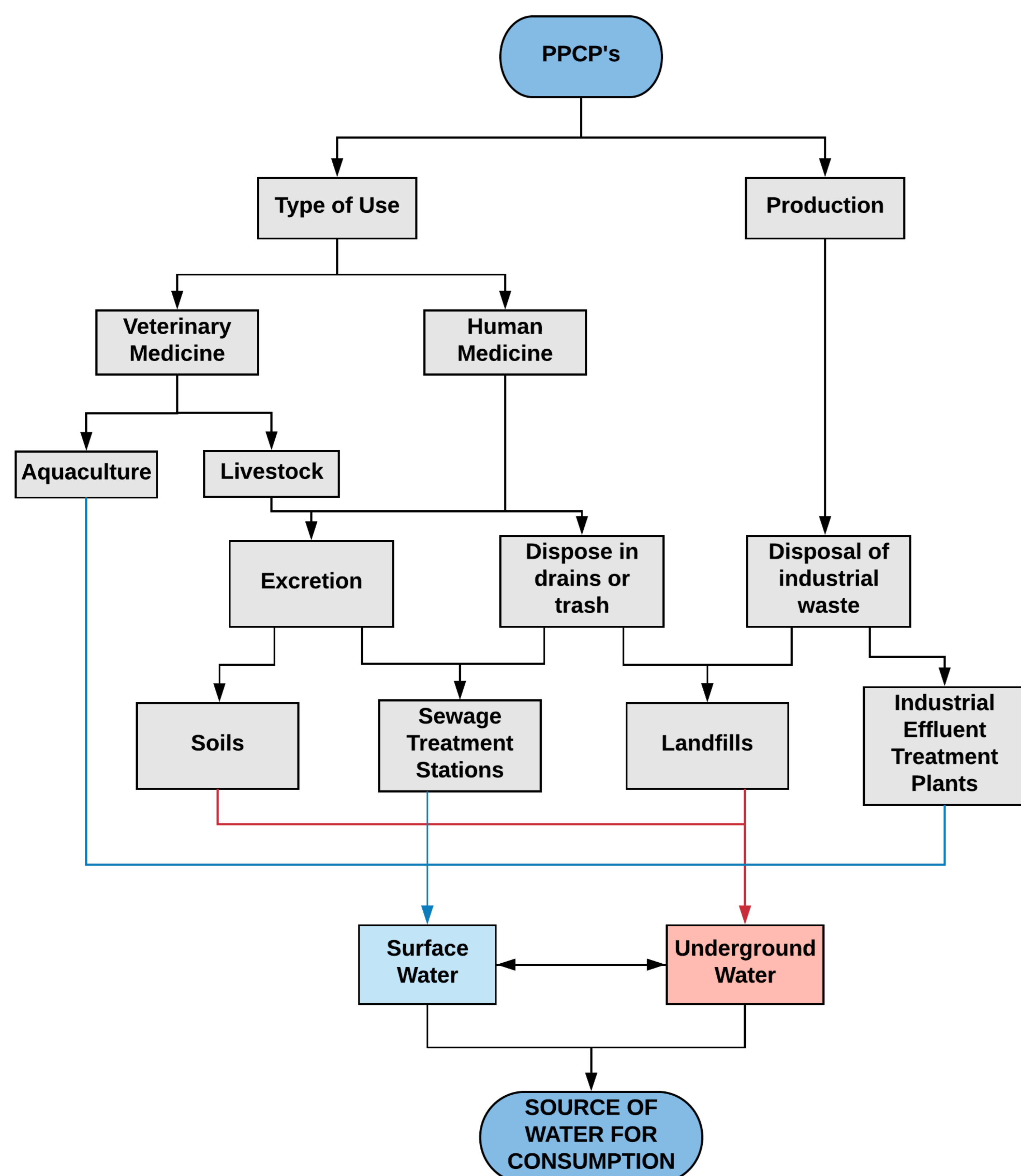
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## EMERGING MICROPOLLUTANTS



Although **Pharmaceuticals and Personal Care Products** are very important to society, these compounds are eliminated in high quantities by the human body and are not efficiently removed from water in sewage treatment plants. After their use, even at low concentrations they can retain their physicochemical properties [1]. Consequently they may cause undesired effects to health or to the environment. Since they are present in very low concentrations, the analysis and study of PPCP's is a tough task, demanding sophisticated instrumental methods of analysis [2].

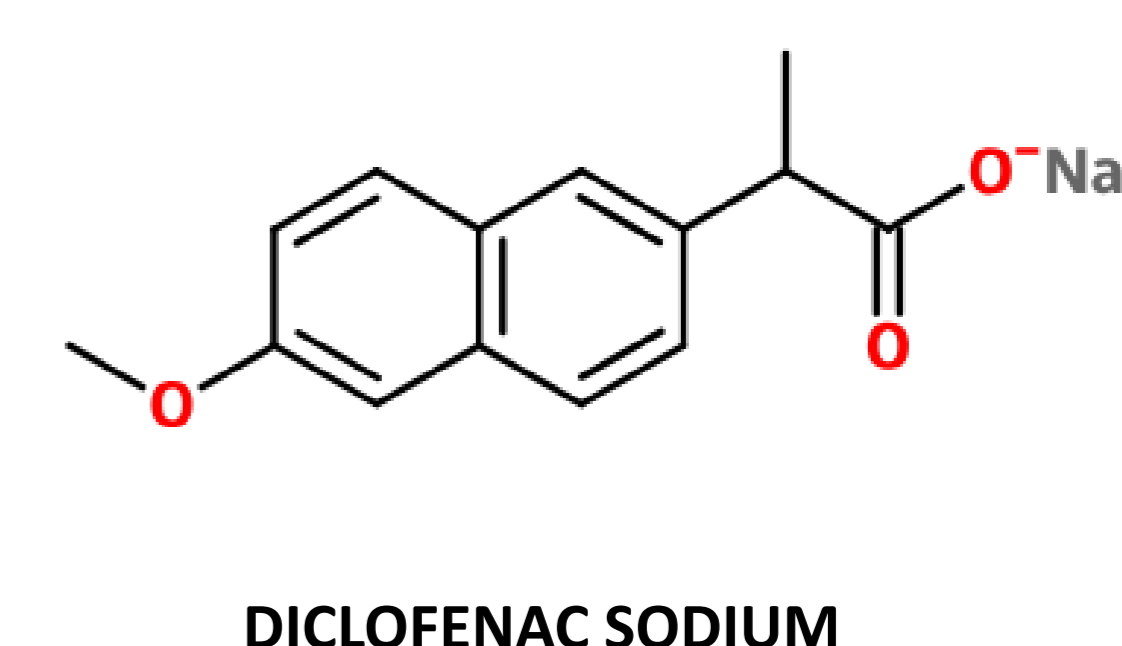
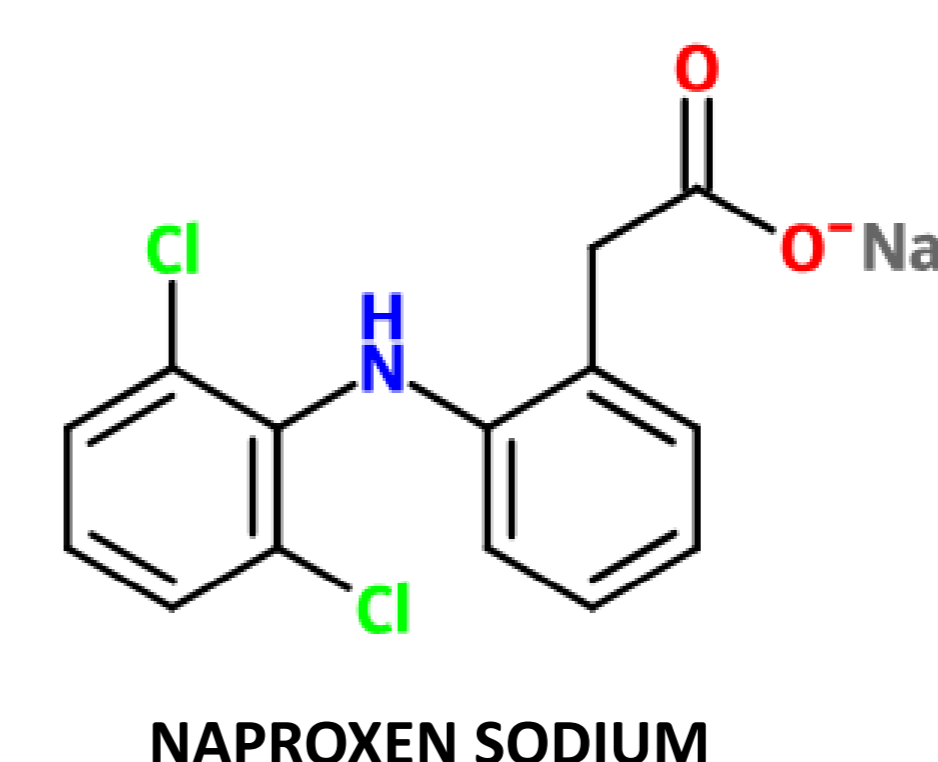
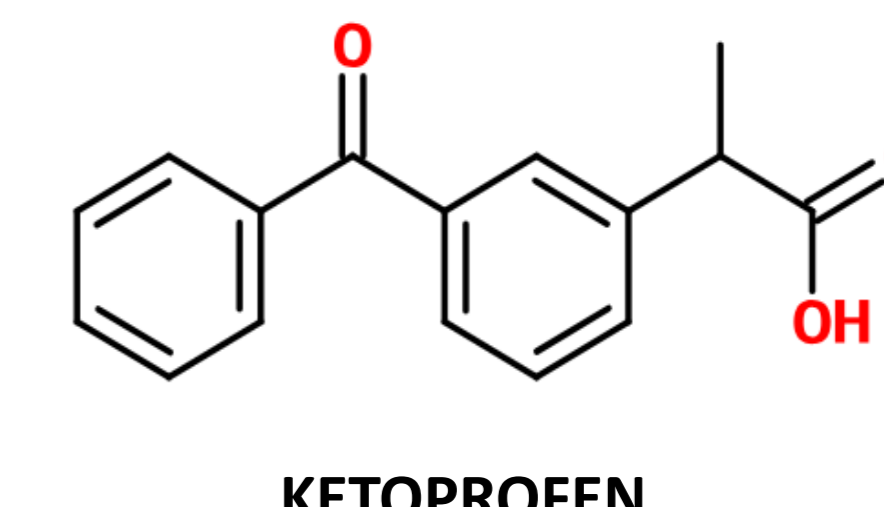
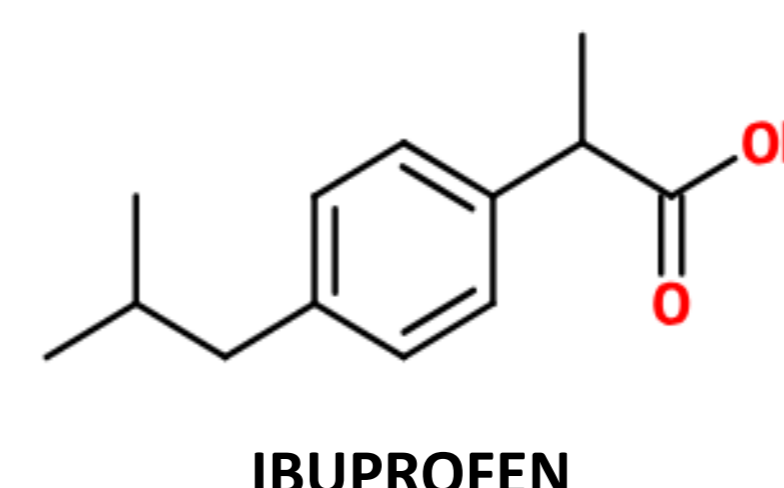
## MAIN SOURCES OF PPCP's CONTAMINATION



## EXPERIMENTAL METHODOLOGY

### SELECTED PPCP'S TO THIS STUDY

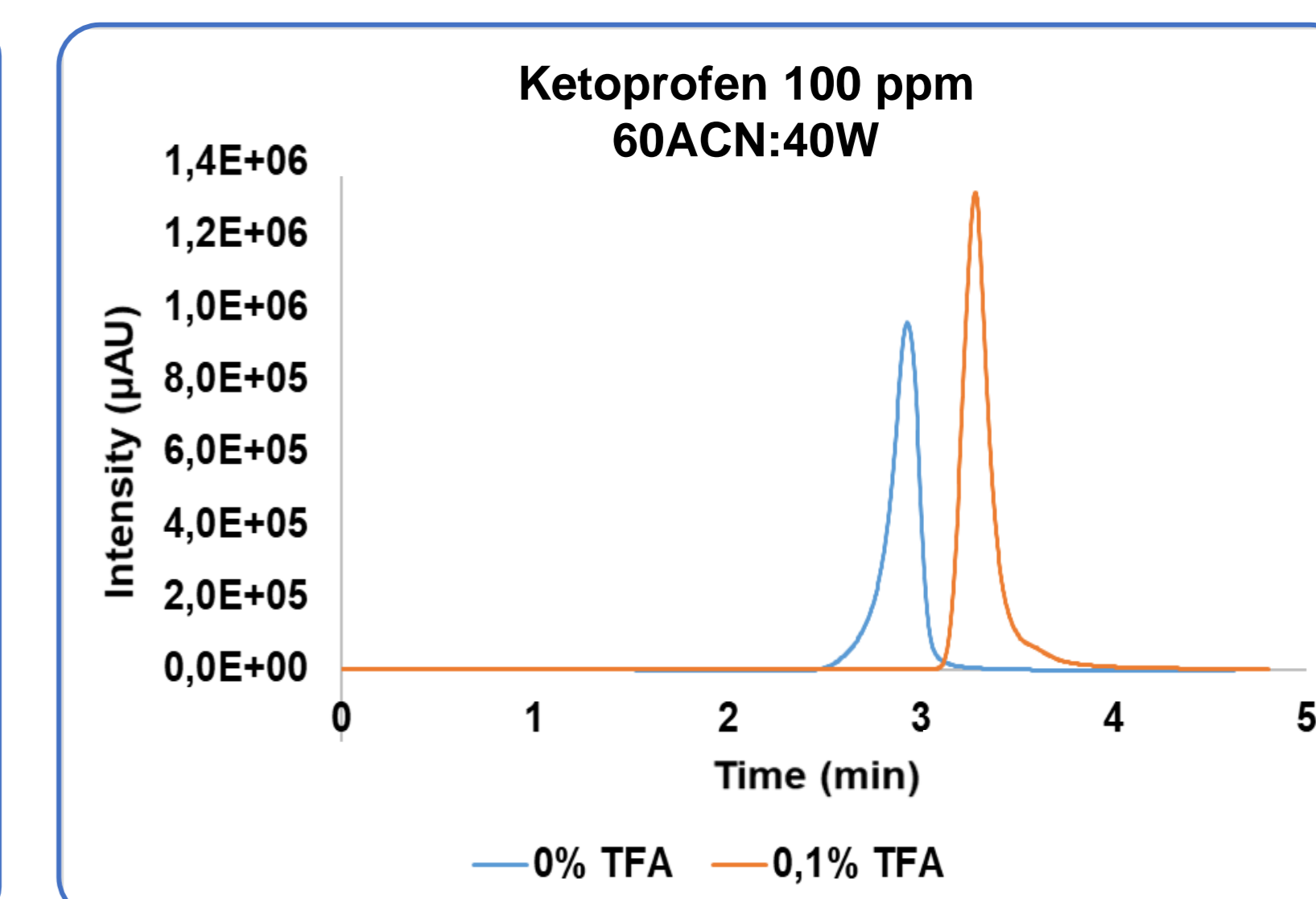
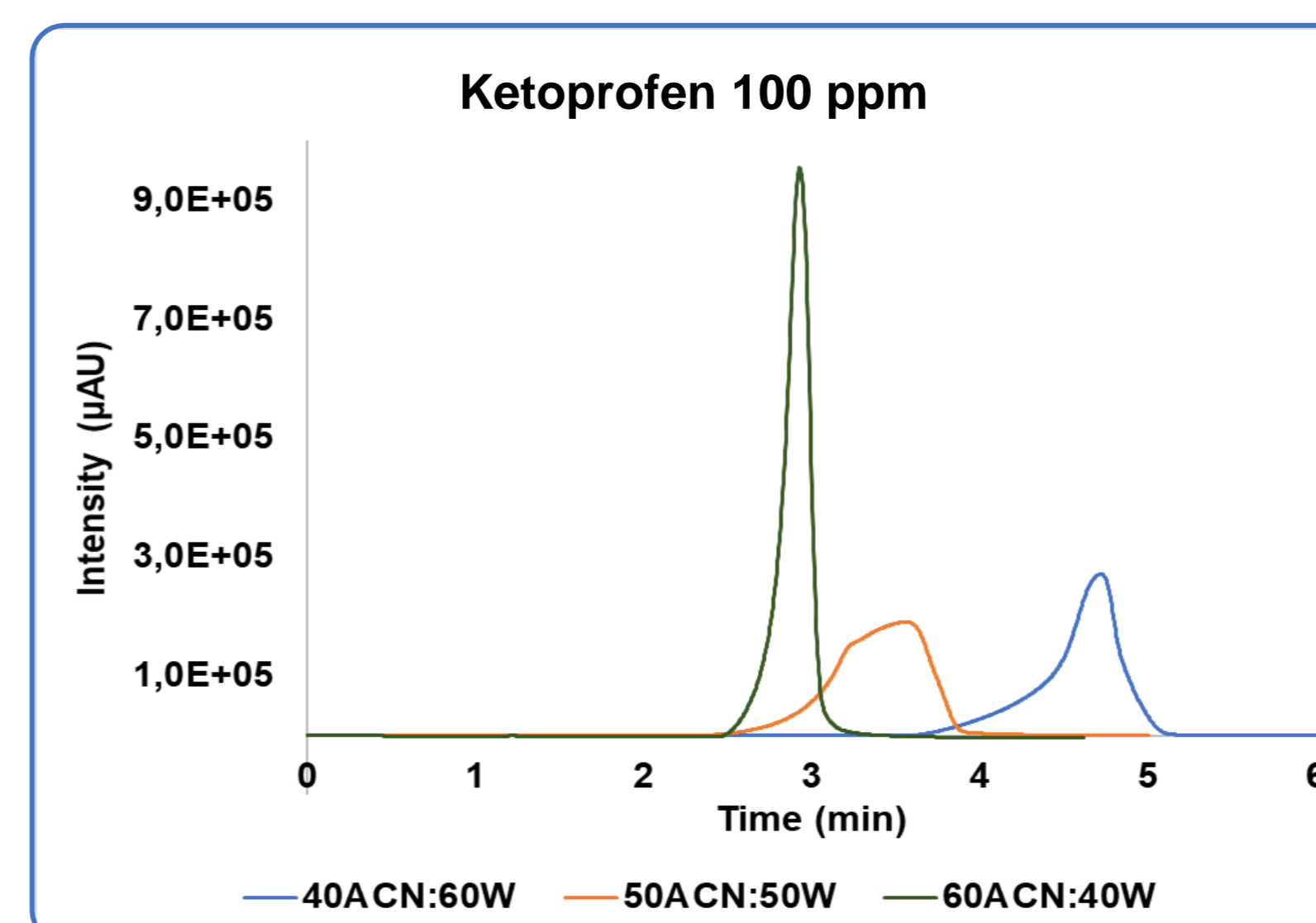
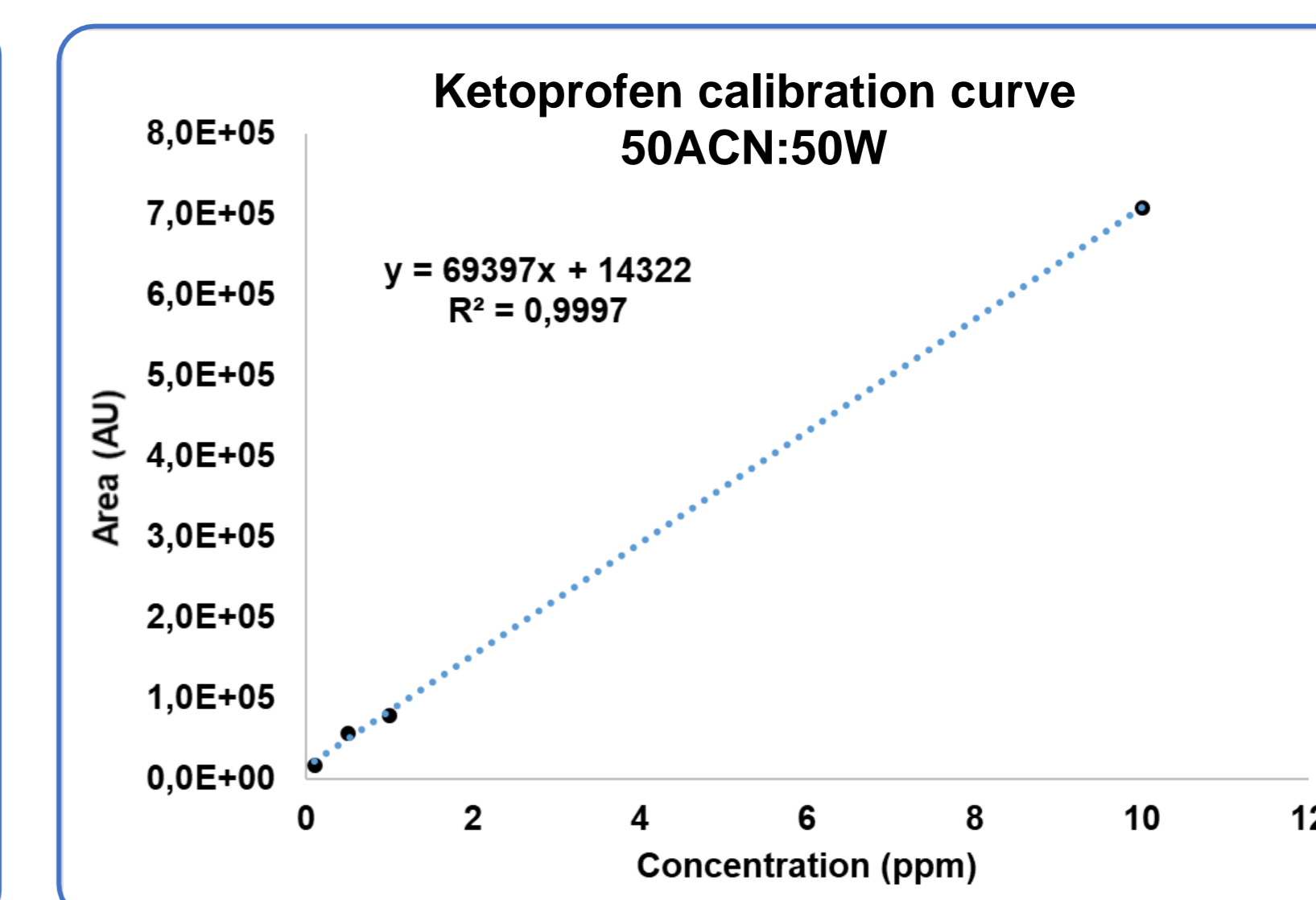
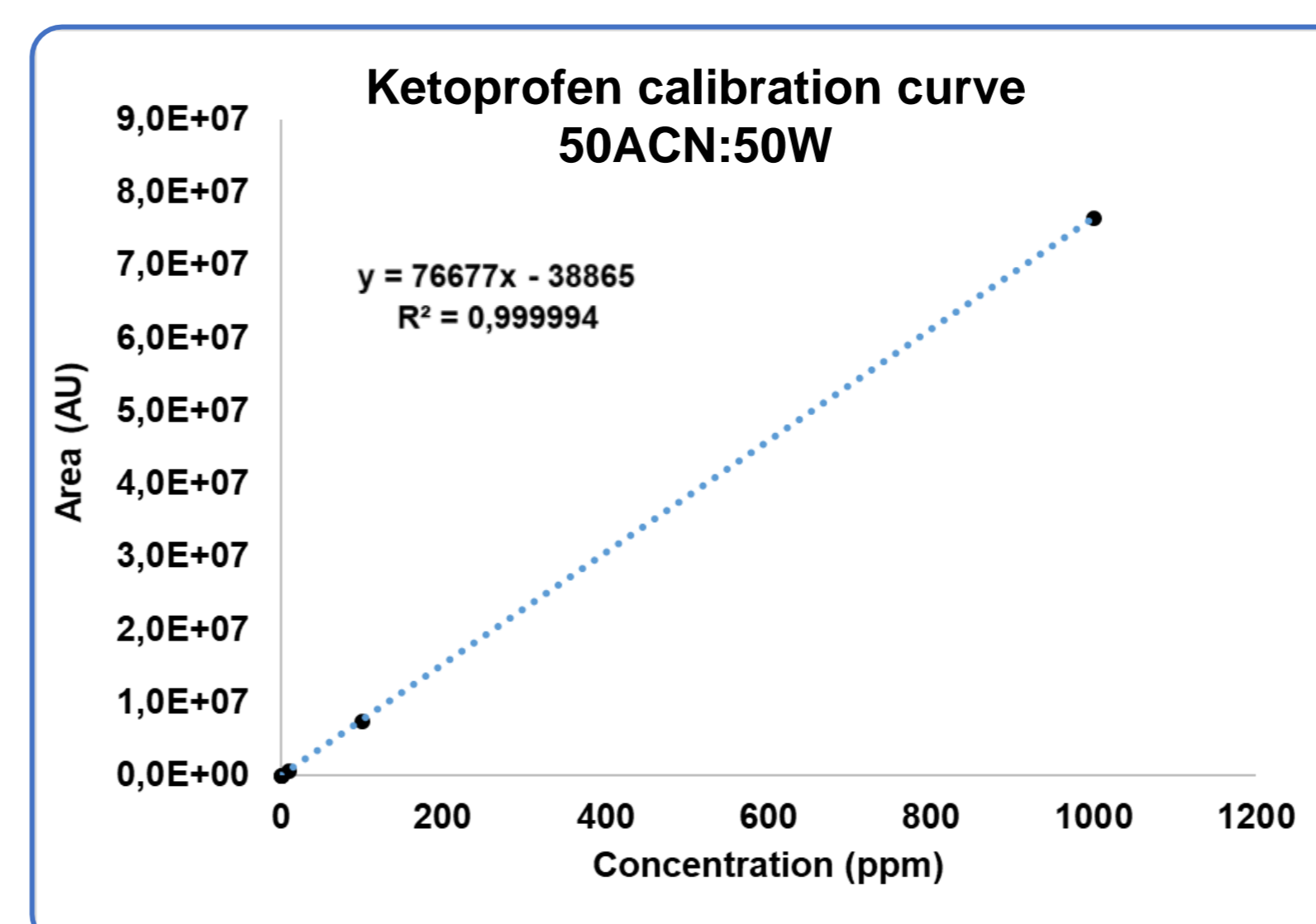
After a preliminary screening, four anti-inflammatory were selected for this study: **ibuprofen, diclofenac, naproxen and ketoprofen**.



### METHOD DEVELOPMENT AND VALIDATION

- Optimization of **SPE** method (N-vinylpyrrolidone-divinylbenzene copolymer cartridge)
- Optimization of **HPLC-DAD** method
- Determination of the **method quality parameters**
- Method validation** with real water matrice samples

The initial **HPLC-DAD** method uses a C18 column, mobile phase flow of 1 mL/min, loop volume of 20 µL and 254 nm. The first results with **ketoprofen** showed that a mobile phase composed by 60% acetonitrile and 40% water leads to better chromatograms, while the presence of TFA also increases its quality.



## REFERENCES

- [1] F. Queiroz, "Desenvolvimento e validação de metodologia para determinação de fármacos e perturbadores endócrinos em amostras de esgoto utilizando extração em fase sólida e cromatografia líquida acoplada à espectrometria de massas", Master Thesis, Ouro Preto Federal University, 2011.  
 [2] A. Viali, "Avaliação da eficiência de remoção de hormônios em estações de tratamentos de efluentes", Concluding Work, Juiz de Fora Federal University, 2014.