

# MOLECULARLY IMPRINTED POLYMER-BASED ELECTROCHEMICAL SENSORS FOR THE DETECTION OF ANTIBIOTICS IN THE ENVIRONMENT

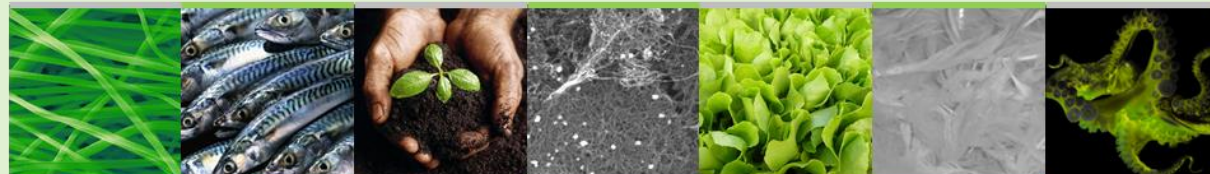
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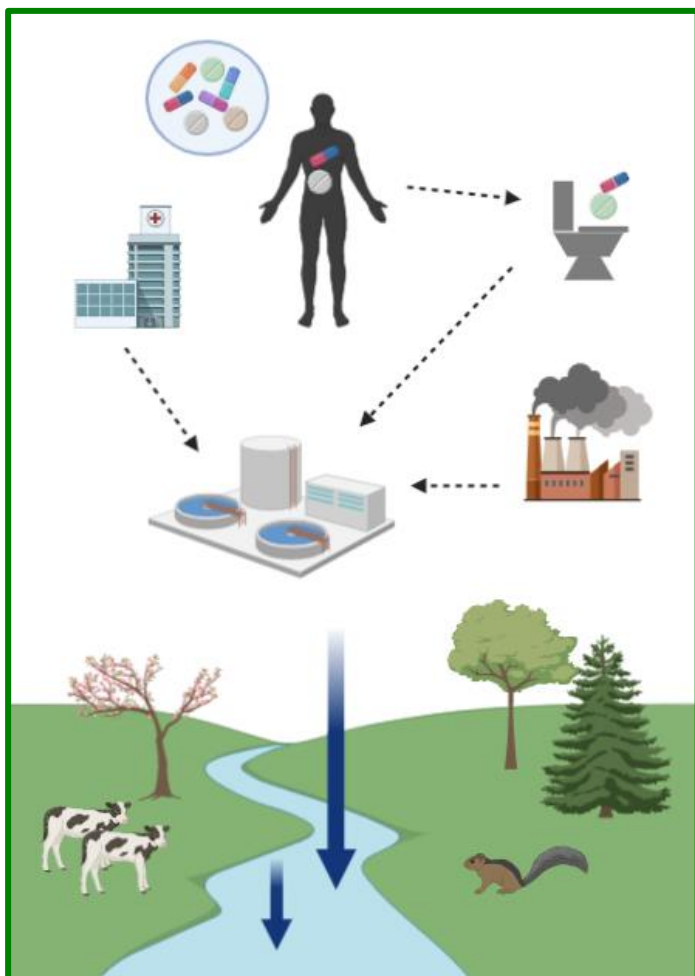
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## Global antibiotic contamination



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Cost-effective and portable analytical sensing devices are necessary

MIPs – artificial receptors for a target molecule



“lock and key” mechanism

- ✓ High affinity and **selectivity** to the target molecule;
- ✓ High chemical and physical robustness;
- ✓ Low cost production and long stability;



Azithromycin (AZY)

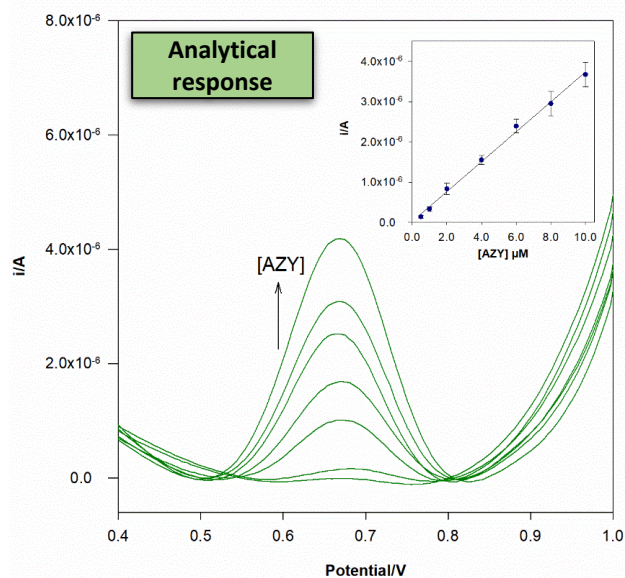
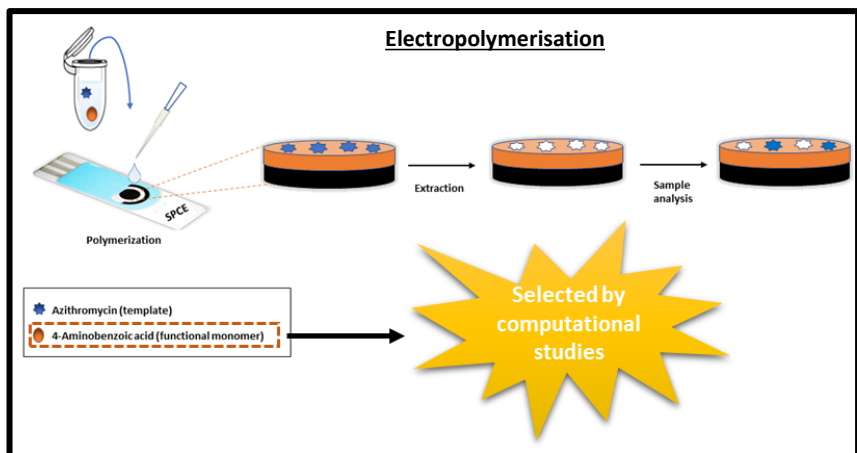
⚠ Detected in different water sources

Furazolidone (FDZ)

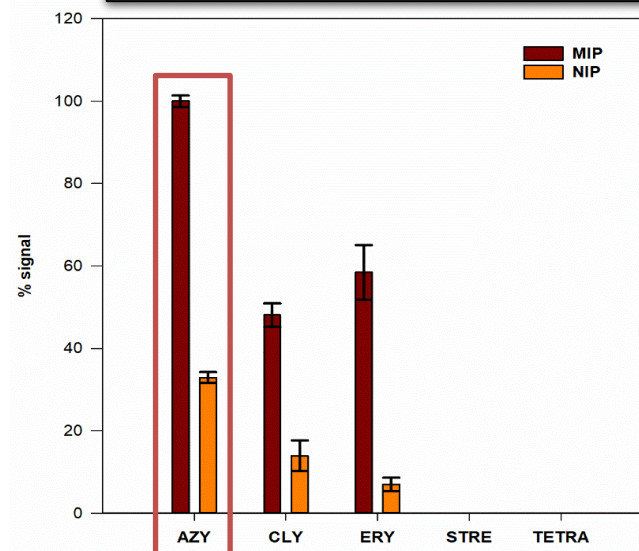
⚠ Potential ecological and human health risks

Their determination is important

## Azithromycin (AZY)



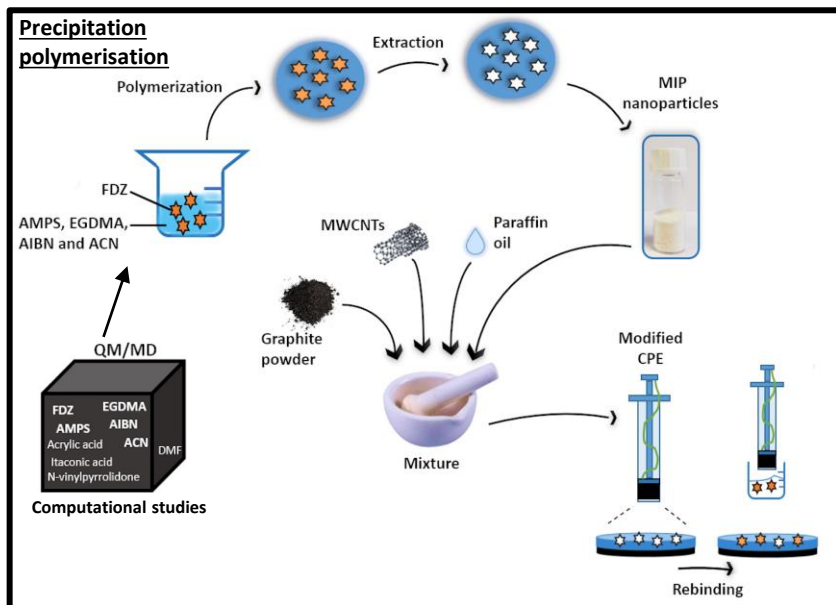
## Selectivity and interference studies



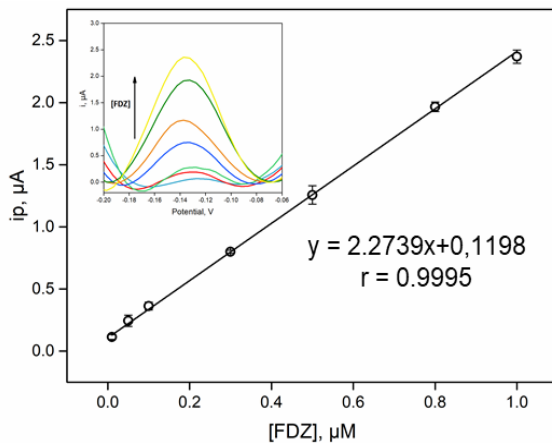
Sample	$[AZY]_{add}/\mu M$	$[AZY]_{det}/\mu M$	Recovery/%
River water	0	—	—
	0.50	0.59	118
	4.0	4.92	123
Tap water	0	—	—
	0.50	0.42	84
	4.0	3.82	96

- ✓ The prepared sensor exhibited a good linear range with a low LOD (0.08  $\mu M$ ).
- ✓ The sensor showed a good selectivity in the presence of other structurally analogous compounds and was successfully applied in water samples (recoveries between 84-123%).

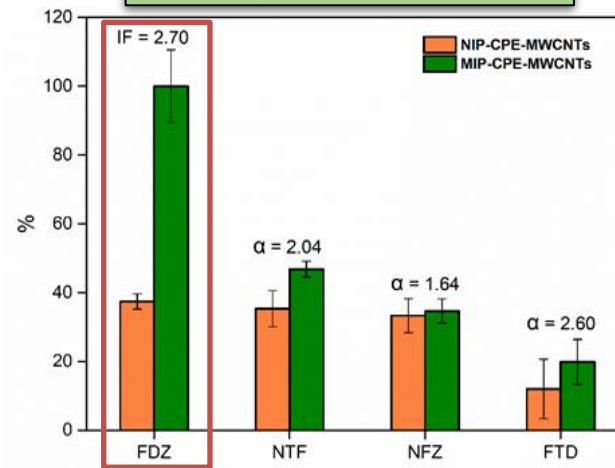
## Furazolidone (FDZ)



### Analytical response



### Selectivity and interference studies



Sample	[FDZ] <sub>add</sub> , µM	[FDZ] <sub>det</sub> , µM	Recovery, %
River water	0	—	—
	0.05	0.052	105
	0.5	0.484	97
Tap water	0	—	—
	0.05	0.051	101
	0.5	0.454	91

- ✓ The prepared sensor exhibited a good linear range with a low LOD (0.03 µM).
- ✓ The sensor showed a good selectivity in the presence of other structurally analogous compounds and was successfully applied in water samples (recoveries between 91-105%).

### Conclusions

The results suggest that the proposed MIPs sensors may be a promising strategy for monitoring AZY and FDZ in environmental waters.

### Acknowledgements

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