

# Application of nanostructured carbon based voltammetric sensors for antibiotics analysis in real matrixes: pharmaceutical tablets, milk and environmental water

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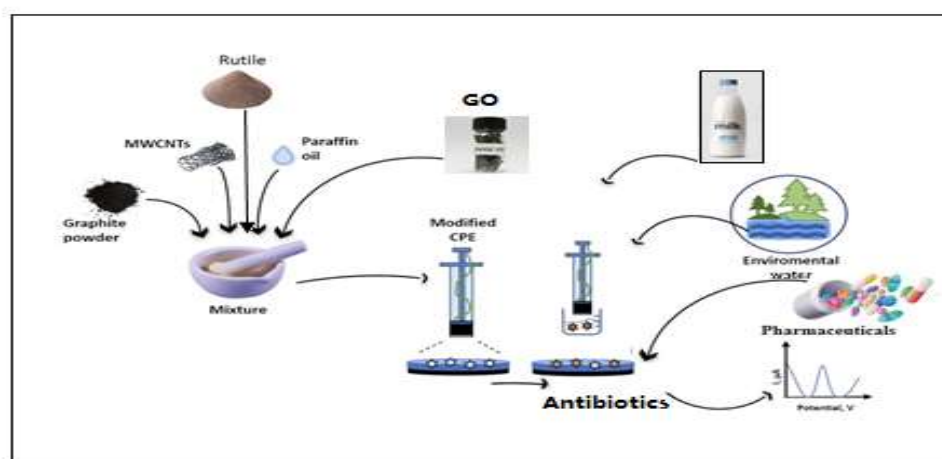
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## Abstract

The antibiotics represent one of the most important therapeutic classes, with a huge impact on the human health. Since, World Health Organization has endorsed a global action plan on antimicrobial resistance, recommending an urgent improvement in the surveillance of the antibiotics use [1,2]. There is a need for the development of sensitive sensors, with low-cost and easy preparation to determine antibiotics in different matrices samples. The present study shows the effect of nanostructured materials (mineral- Rutile; metal- Au/np; and carbon nanomaterials- multi walled carbon nanotubes and graphene oxide), used alone or combined with other (nano)materials, into bulk modification of carbon paste electrode CPE for detection of  $\beta$ -lactam (penicillin) and macrolide (azithromycin) antibiotics, using voltammetric techniques: CV, SWV and DPV. In optimal condition modified sensors resulted with a good analytical performance toward tested antibiotics compared with bare CPE, indicating a good compatibility of nanomodifiers into CPE electrode. Satisfactory results were found in the analysis of real samples and good recoveries were obtained by applying the standard addition method to spiked river water, pharmaceutical tablets, and milk samples.

## References

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**Figure 1:** Schematic preparation of nanostructured carbon based sensors for antibiotic detection