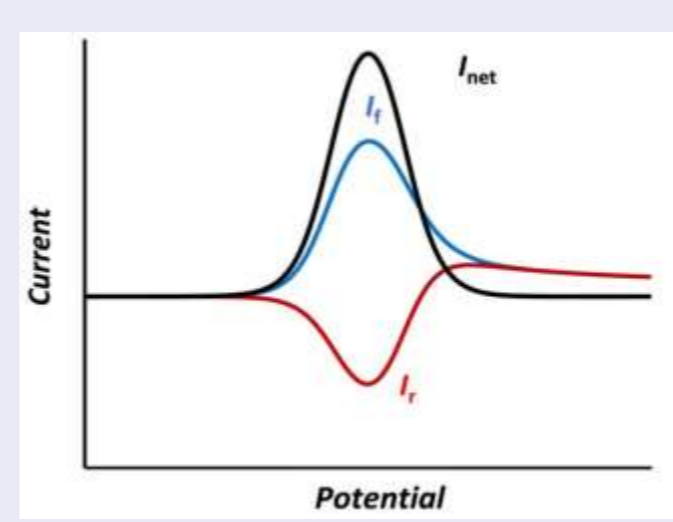
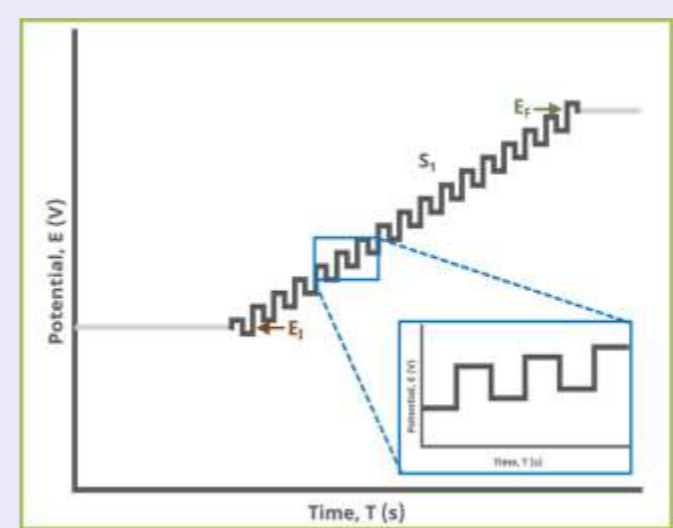
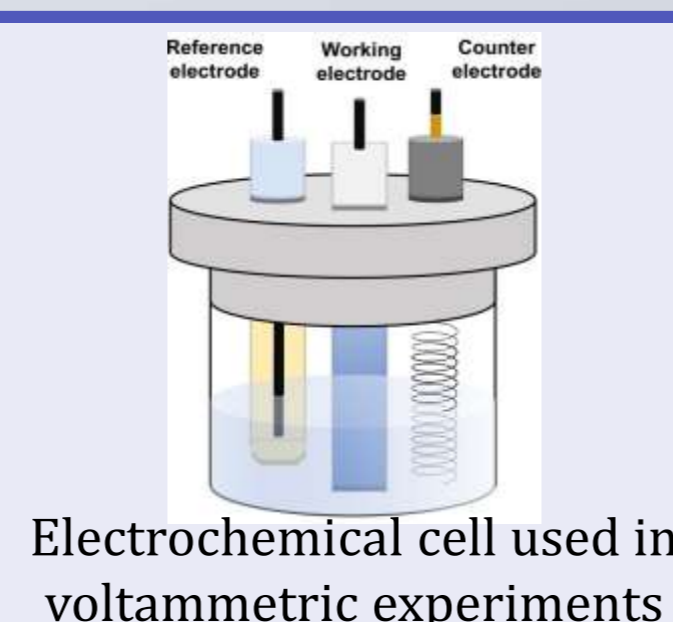


INTRODUCTION

Square-Wave Voltammetry (SWV) is an electrochemical method that offers some advantages to common techniques like Cyclic Voltammetry (CV) for mechanistic insights, but it is most powerful voltammetric technique in respect to kinetic measurements and analytical sensitivity.

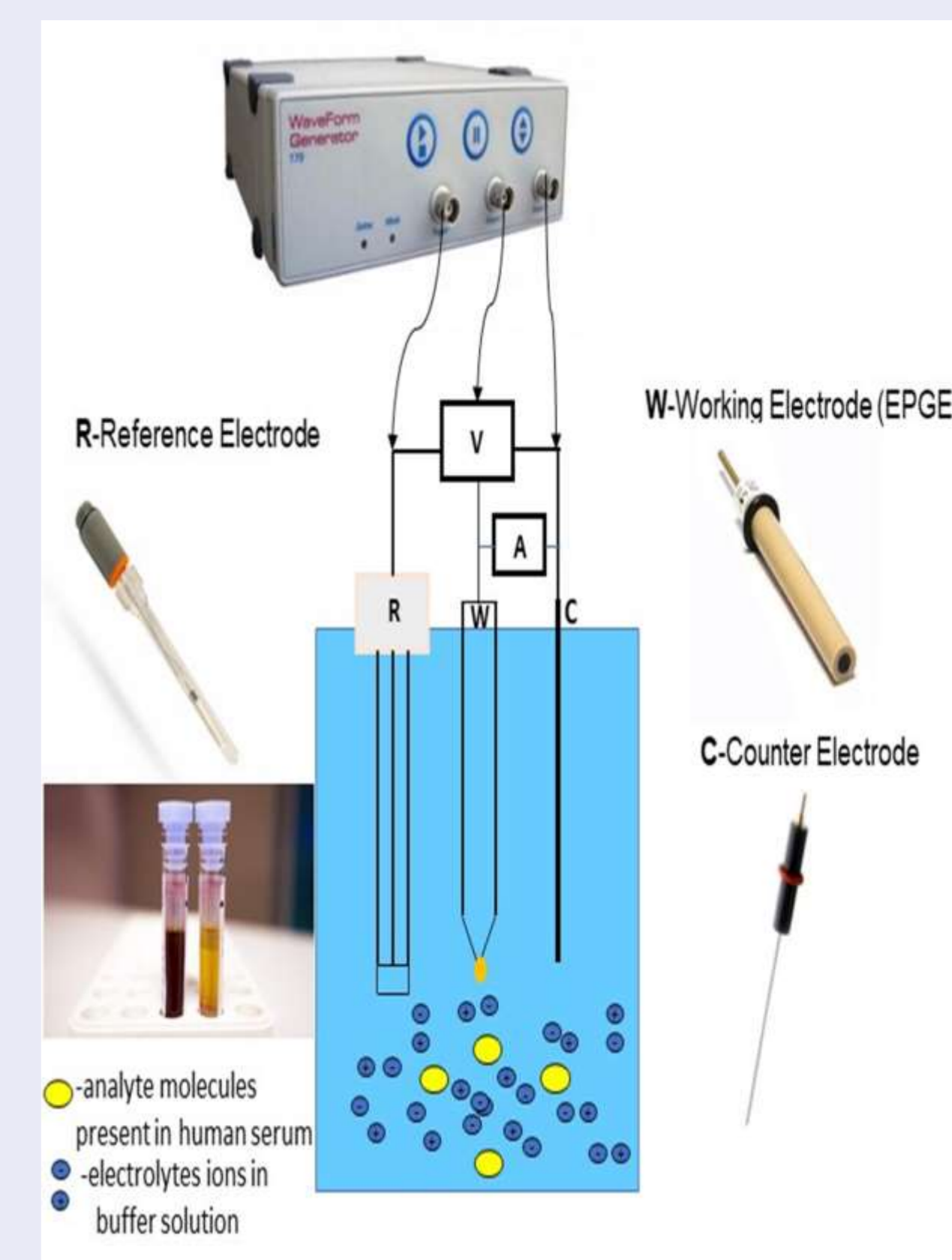
In this work, we explored SWV for making direct voltammetric analysis in human blood serum without any pre-treatment.



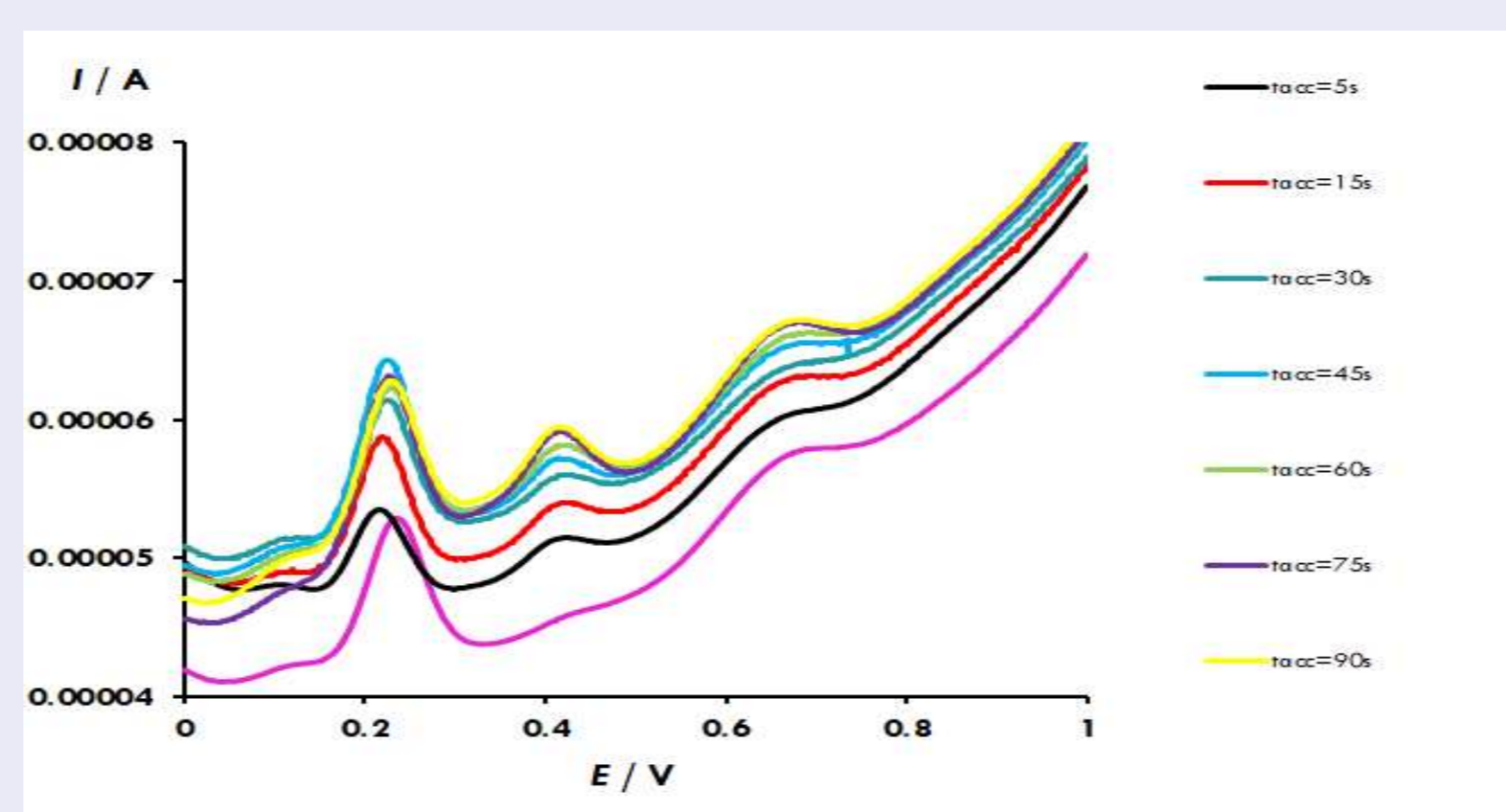
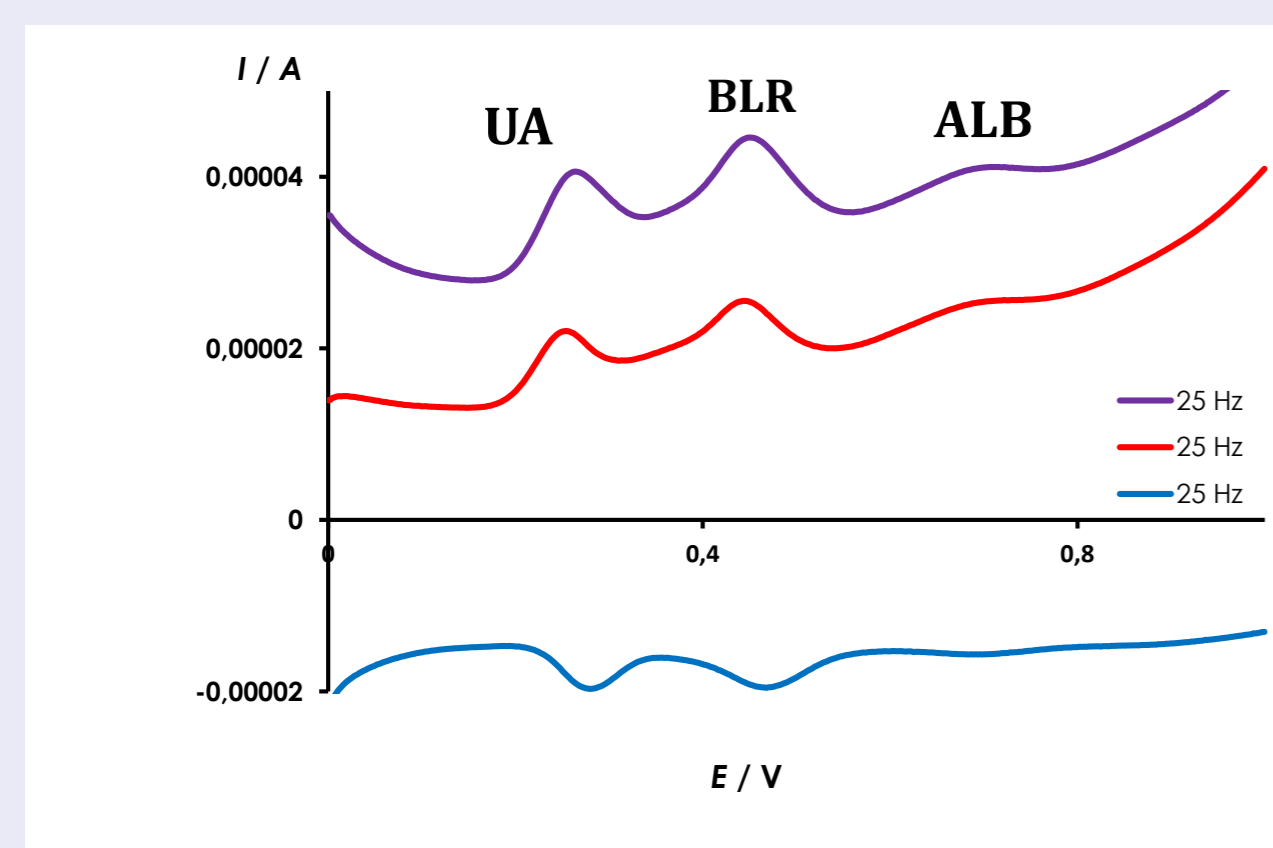
EXPERIMENTAL

In a simple experimental protocol, by dissolving **hundreds of microliters human serum in 10 mL of phosphate buffer with pH = 7.34**, and by using a common voltammetric set up, it was possible to make direct voltammetry with edge plane pyrolytic graphite electrode (**EPPGE**) explored as a working electrode.

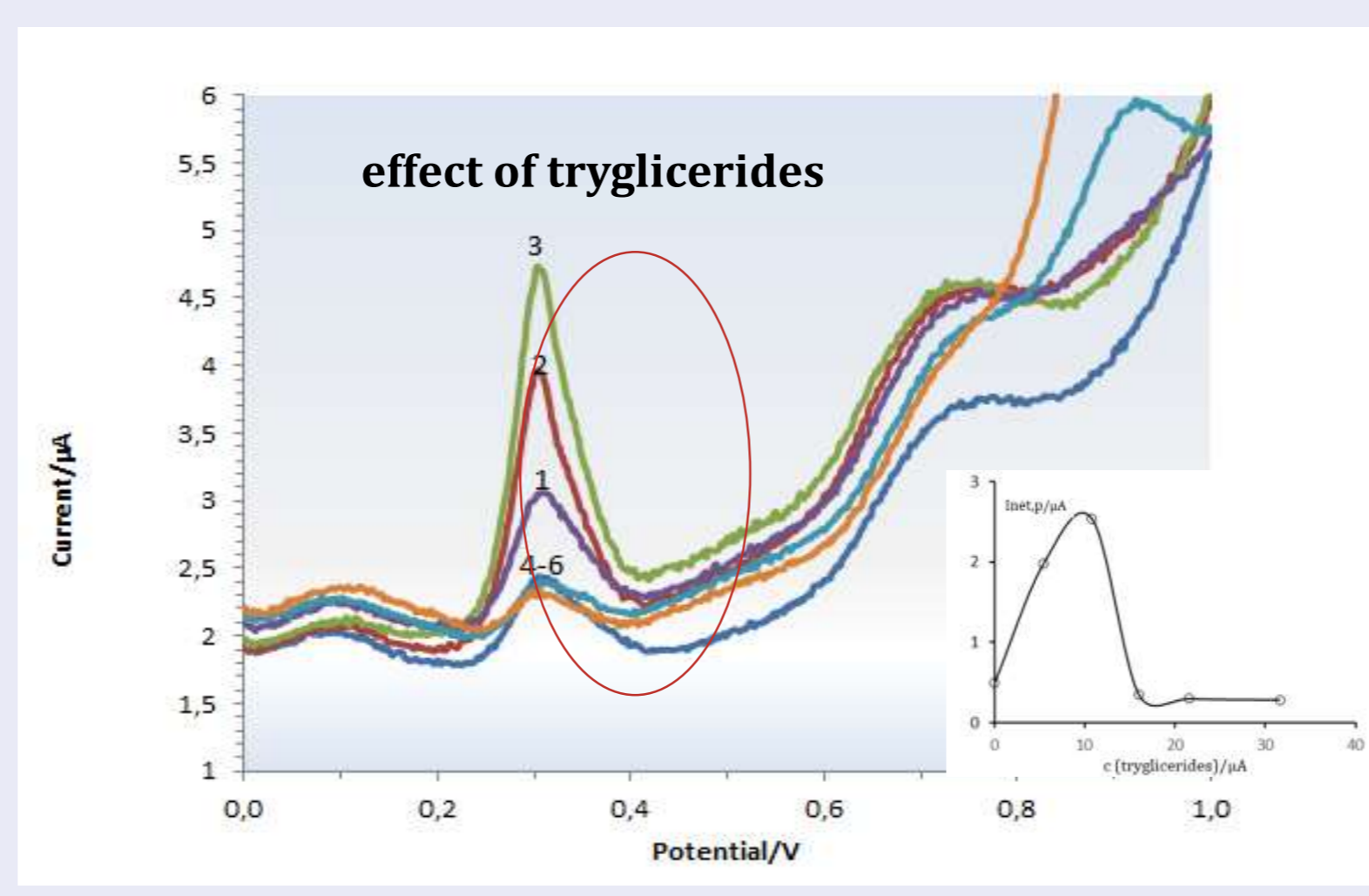
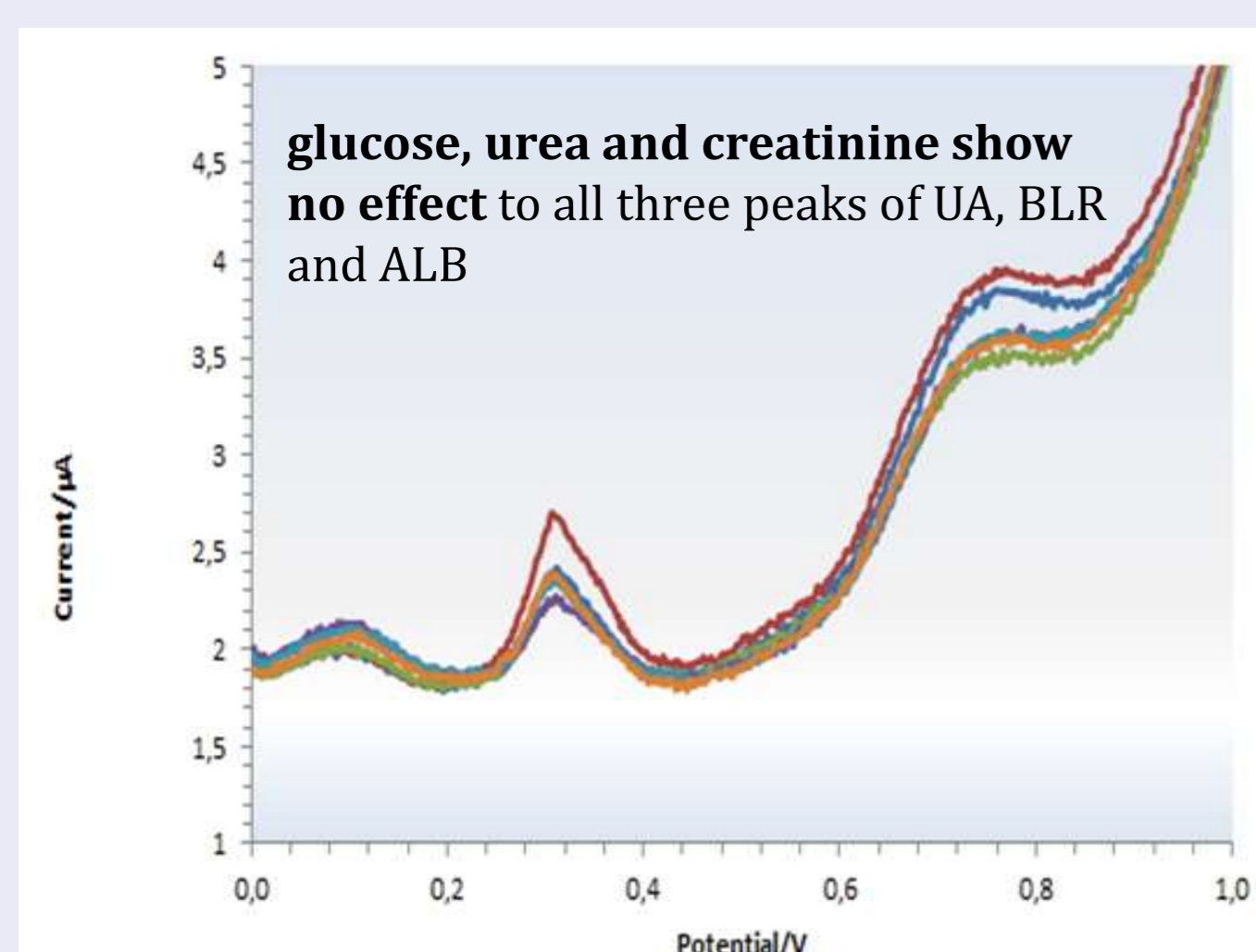
PalmSense 2 was a potentiostat used to perform voltammetric experiments.



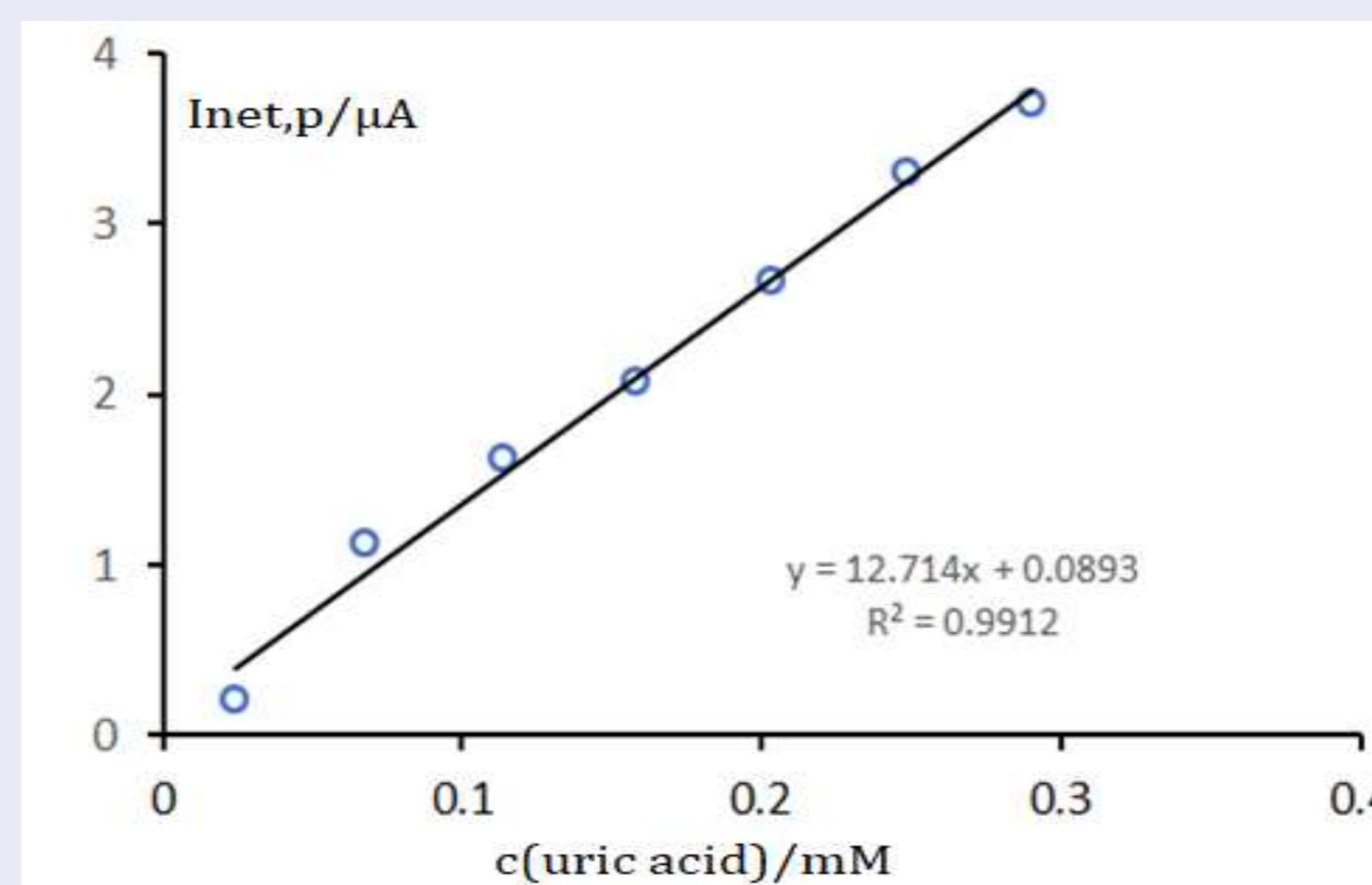
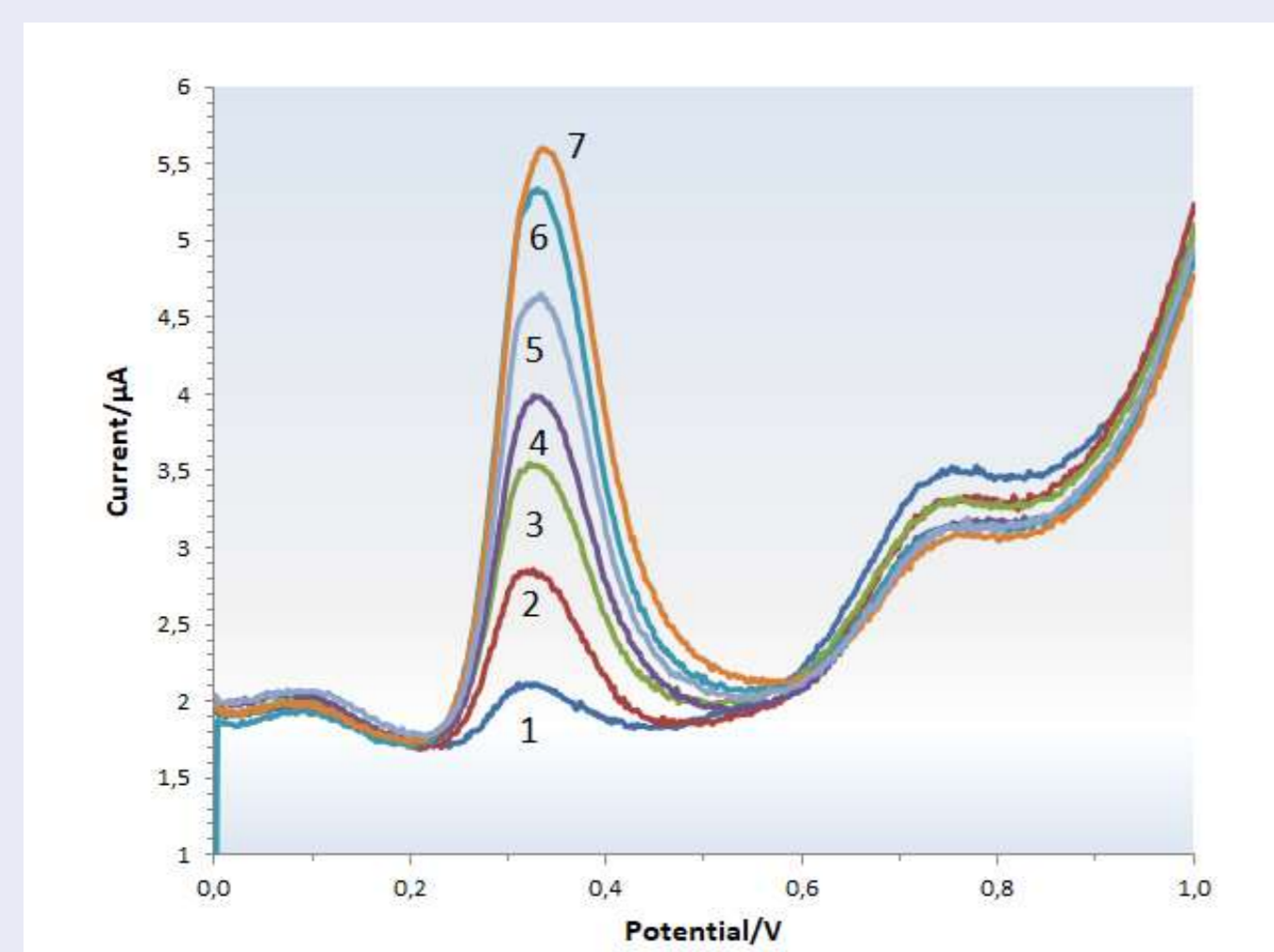
RESULTS



SWV of human blood serum exhibit **three distinct voltammetric peaks** that have been assigned to originate from electrochemical transformation of **uric acid (UA)**, **bilirubin (BLR)** and **albumin (ALB)**. All peaks show adsorption properties, implying that **their electrode transformation takes place from an adsorbed state**



When studying the effect of interferences present in human serum, it was shown that triglycerides affect significantly the peak of UA



By using the standard addition method, results of UA content in human serum determined with SWV were almost identical with those obtained by UV-VIS

CONCLUSION

Advantages of using SWV in designing a biosensor for direct quantification of uric acid, bilirubin and albumin in human serum:

- fast instrumental response;
- very cheap instrumentation;
- common chemicals are used (available in every Lab) and no additional treatment of the sample is needed.

REFERENCES