

Title: **FIA-ED: optimization of method for
electrochemical study of doxorubicin**

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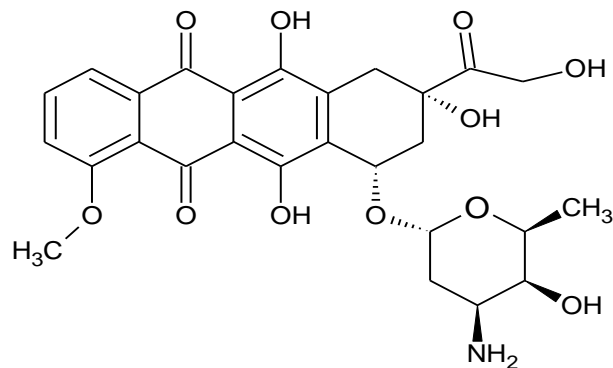
Registration number of project: CZ.1.07/2.3.00/20.0148

Project title: International cooperation in the field of "in vivo" imaging techniques

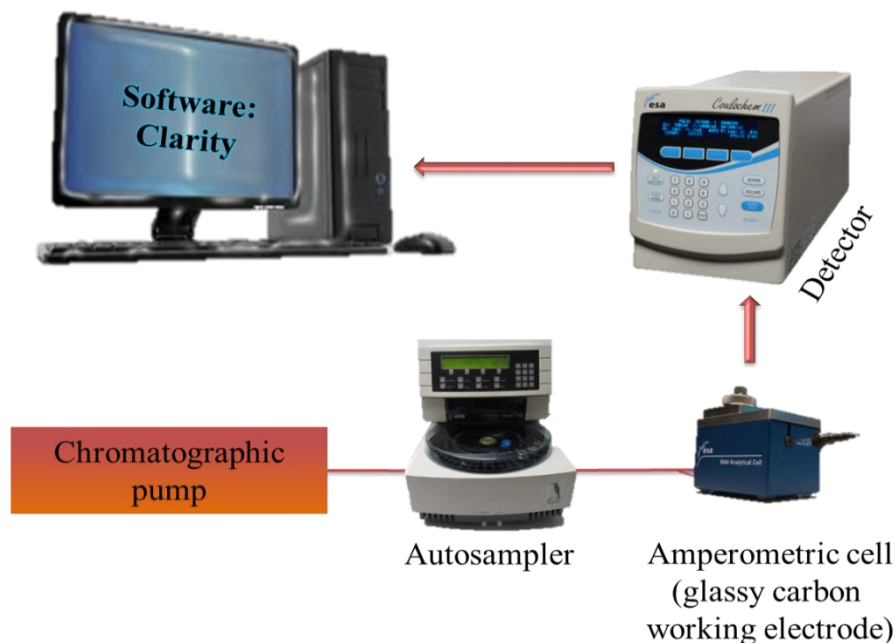


Doxorubicin

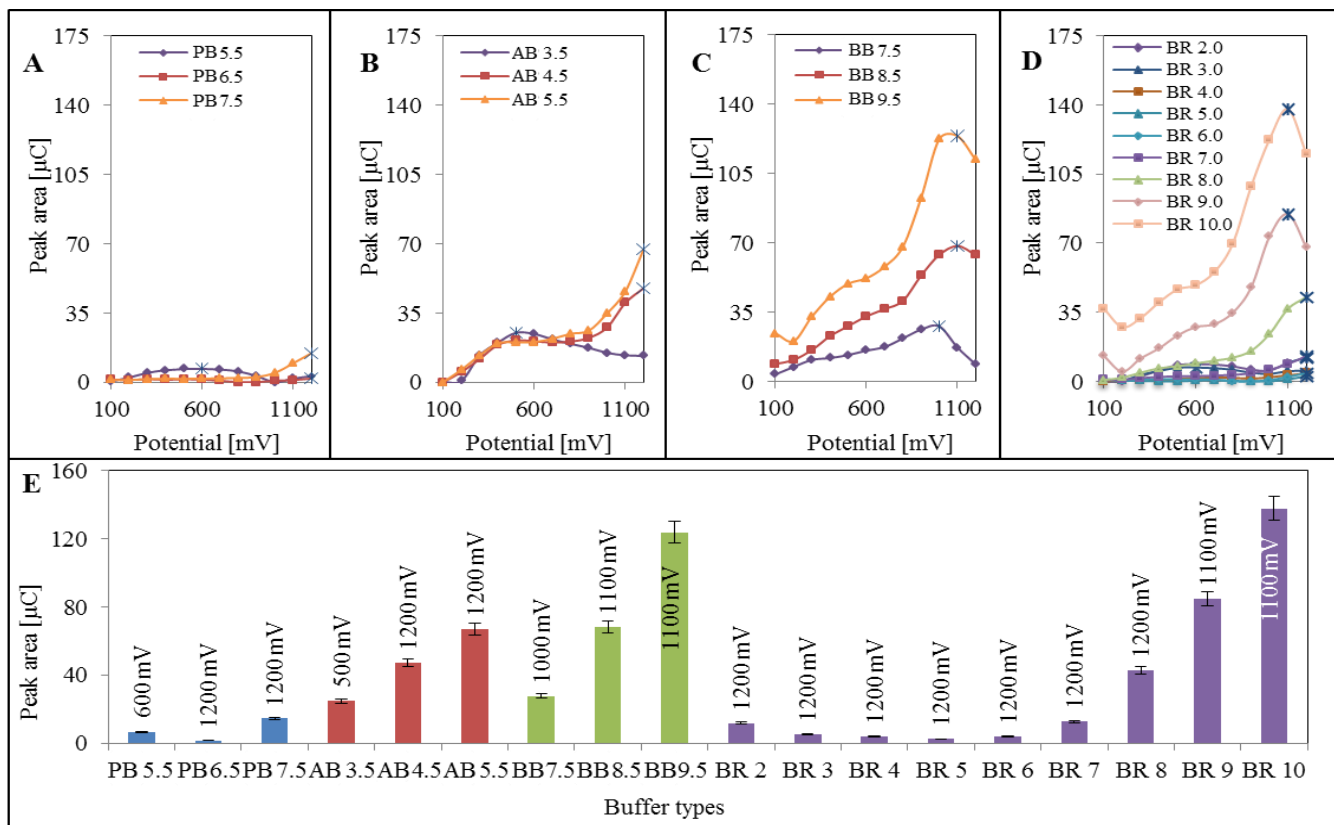
- Anthracycline antibiotic.
- Firstly isolated from *Streptomyces peucetius* in early 1960s. Research was funded by Pharmitalia Research Laboratories.
- In chemotherapy it is mostly used for treatment of breast cancer, ovarian cancer, lung cancer, leukemia.
- Electroactive quinone and hydroquinone groups.



- Flow injection analysis with electrochemical detection
- Chromatographic pump Model 584 ESA (ESA Inc., Chelmsford, MA)
- Electrochemical detector Coulochem III (ESA, USA) with amperometric cell (model 5040, ESA, USA). The cell contained a working electrode made from glassy carbon, reference hydrogen-palladium electrode and platinum auxiliary electrode.

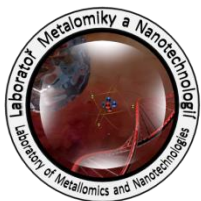


FIA-ED: Selection of optimal buffer and optimal pH for doxorubicin detection



Legend: Optimization with working solution of doxorubicin ($50 \mu\text{g}\cdot\text{ml}^{-1}$). **(PB)** Phosphate buffer, **(AB)** acetate buffer, **(BB)** borate buffer and **(BR)** Britton-Robinson buffer.

Best conditions: Britton-Robinson buffer at pH 10.0.

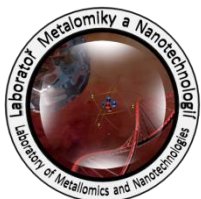


Conclusion

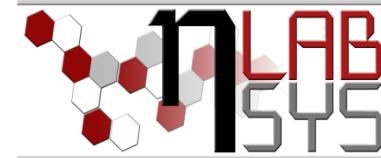


- Best detection was achieved using a Britton-Robinson buffer of pH 10.
- Decrease of pH led to the reduction of the signal intensity.
- This work was a part of my diploma thesis¹ and published paper².

1. GURÁŇ, Roman. *The study of qualities of liposomes as drug carriers with utilization of different analytical methods*. 2014. Diploma thesis. Masaryk University, Faculty of Science. Supervisor: Ondřej Zítka.
2. KOMINKOVA, M., R. GURAN, et al., *Study of Functional Qualities of Different Types of Tailored Liposomes with Encapsulated Doxorubicin using Electrochemical and Optical Methods*. International Journal of Electrochemical Science. 2014, 9(6): 2993-3007.



Acknowledgment



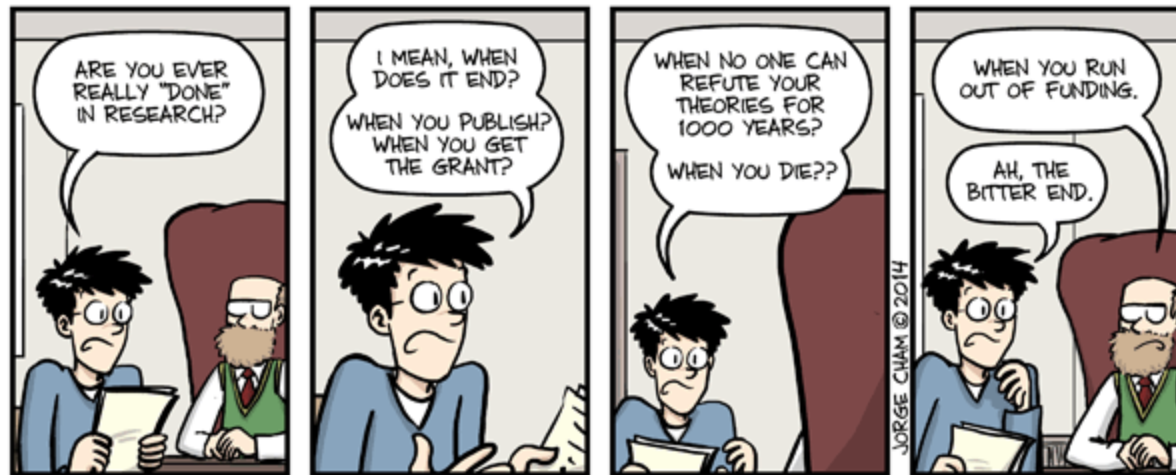
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Thank you for your attention! 😊



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