Dual-mode determination of selenium in biofortified *Allium* microsamples following piazselenol formation and solid phase microextraction

*Bogdan M. Boșca, Augustin C. Moț

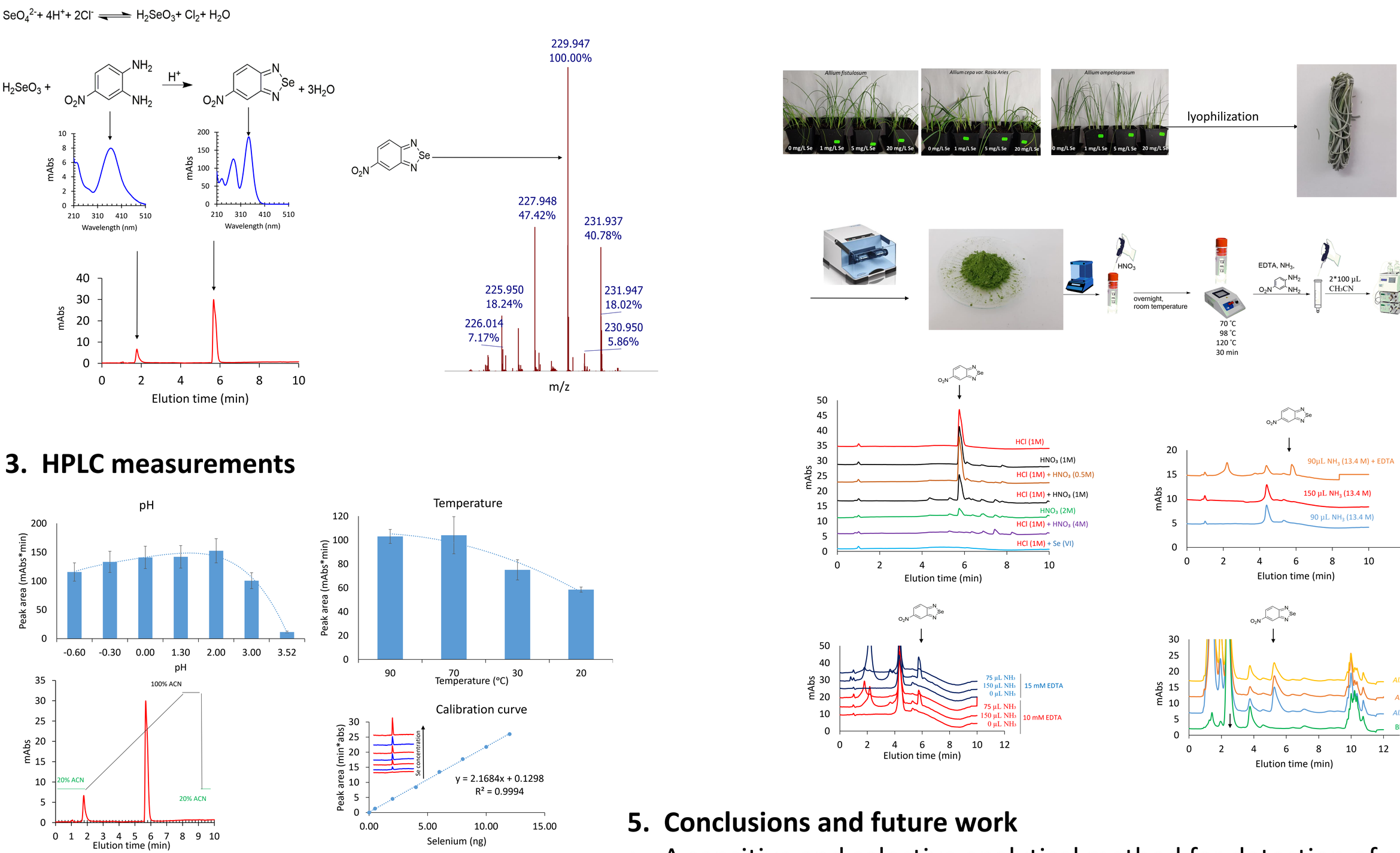
Babeș-Bolyai University, Faculty of Chemistry and Chemical Engineering, Chemometrics and Bioanalytical Chemistry Laboratory, Analytica Research Center, Department of Chemistry, 11 Arany János, RO-400028 Cluj-Napoca, Romania
*bogdan.bosca@stud.ubbcluj.ro

1. Introduction

- Selenium is a metalloid placed in group 16, period 4 of the periodic table.[1] It is a micronutrient naturally distributed in all compartments of the environment (soils, water, air).[2] There is a narrow range between the recommended intake of selenium and the amount that makes this element a toxicant.[3] Toxicity of selenium depends on its chemical form. Inorganic species (*e.g.* selenite, selenate) are characterized by a higher toxicity than organic compounds (*e.g.* selenocysteine, selenomethionine) that contain selenium.[4]

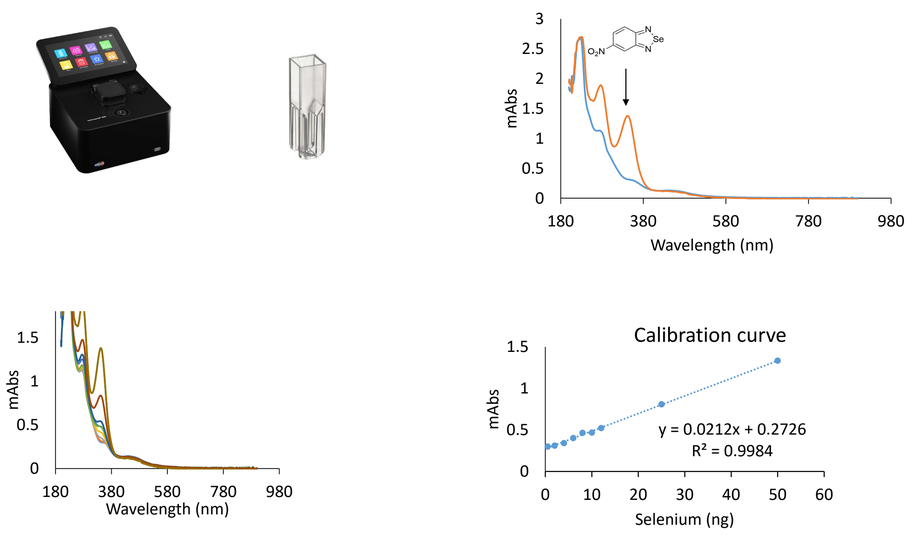
2. Method's principle and samples treatment

- The proposed method suppose the selective formation of piazselenol complex between 4-nitro-*o*-phenylenediamine and Se in oxidation state IV. The detection of piazselenol was conducted using HPLC technique and UV-Vis spectroscopy.



3. HPLC measurements

4. UV-Vis measurements



5. Conclusions and future work

- A sensitive and selective analytical method for detection of selenium was optimized and successfully applied.
- The future aim is to study the behaviour of several aromatic diamines in order to detect selenium based on piazselenol formation.

6. References

1. R. Boyd, *Nat. Chem.*, 2011, **3**, 570.
2. M. Sarkouhi, Y. Yamini, M. R. K. Zanjani and A. Afsharnaderi, *Int. J. Environ. Anal. Chem.*, 2007, **87**, 603–614.
3. K. Huang, K. Xu, W. Zhu, L. Yang, X. Hou and C. Zheng, *Anal. Chem.*, 2016, **88**, 789–795.
4. Y. Martínez-Bravo, A. F. Roig-Navarro, F. J. López and F. Hernández, *J. Chromatogr. A*, 2001, **926**, 265–274.

7. Acknowledgements

- This work has been financially supported by PN-III-P1-1.1-TE-2019-1396.