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## Optimization of PtNPs biosynthesis method using *Picea abies* sp. and Beech sp. aqueous bark extracts

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**S**tatement of the Problem: The study of nanoparticles (NP) is a continuously expanding field [1]. The biosynthesis of NPs with the help of natural extracts presents numerous advantages (simple, economical, safe for the environment, high reproducibility), being preferred by researchers, to the detriment of chemical synthesis [2,3]. The purpose of this study was to identify the optimal conditions for the synthesis of PtNPs with natural bark extracts. Methods: First, the aqueous bark extract were obtained from *Picea abies* sp. and Beech sp. by ultrasound-assisted extraction. The salt used was K<sub>2</sub>PtCl<sub>6</sub>. In order to identify the optimal conditions of PtNPs biosynthesis, numerous determinations were made in which the concentration of salt solution (0,5 mM, 1mM, 2mM), temperature (50°C, 70°C, 80°C), pH (the initial pH of the mixture±2 pH units), cation:extract ratio (1:10, 1:50, 1:100) varied. The synthesis was monitored for 24 hours, with absorbance reading at 2 hours, wavelength range: 250-450 nm. Findings: The bioreduction of Pt<sup>4+</sup> was confirmed by the color change from pale yellow into black and by UV-VIS spectroscopy. The recorded spectrum shows a surface plasmon band at 263 nm for Pt<sup>4+</sup>, 280 nm for *Picea* sp. and 282 nm for Beech sp. In case of PtNPs all these bands disappear (characteristic thing for this metal). Conclusion: As a result of the optimization processes for PtNPs biosynthesis, the following results were obtained: for *Picea abies* sp (molid) Pt 1mM, ratio 1:10, pH 10, 80oC; for Beech sp. Pt 1mM, ratio 1:10, pH 10, 70oC.

### Biography

Lecturer Ph. Lavinia Berta carries out her teaching and research activities at General and Inorganic Chemistry Department, Faculty of Pharmacy, University of Medicine, Pharmacy, Science and Technology GE Palade of Targu Mures, Romania. Her expertise is in the field of inorganic chemistry - synthesis, identification and characterization of noble metal nanoparticles (UV-VIS, FT-IR, TGA, ICP).

She has run two national grants as principal investigator. Her research work is disseminated through 15 ISI articles, 7 BDI articles, and 12 participations at national and international conferences.

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