Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Bio-mediated synthesis, characterization and cytotoxicity of gold nanoparticles.

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Supplementary Information

Spectroscopic experiments (phosphorous and proton NMR measurements and electrophoresis of the extract and of the obtained nanoparticles) were performed in order to identify the molecules involved in the synthesis of gold nanoparticles. Unfortunately the exact components responsible for this process could not be identified. On the phosphorous NMR no signal coming from the sample containing NPs and mint extract was register . However on the proton NMR lots of signals were observed especially in region from 3.5 to 5 ppm but due to overlapping of the signals they could not be identified properly. Additionally, in NPs sample lack of signals from aromatic proton region (6.5 to 8 ppm) presented in extract (Fig.1) was observed.

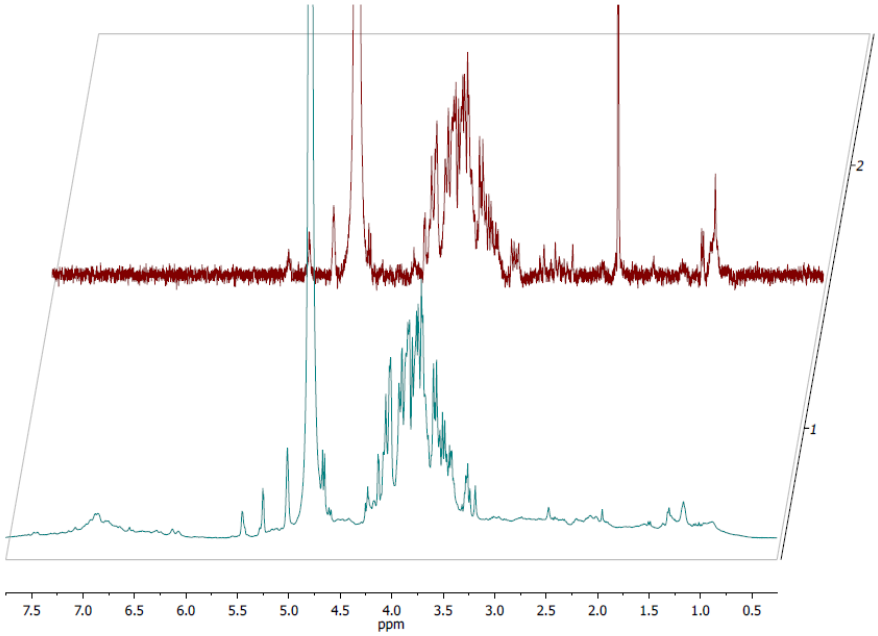
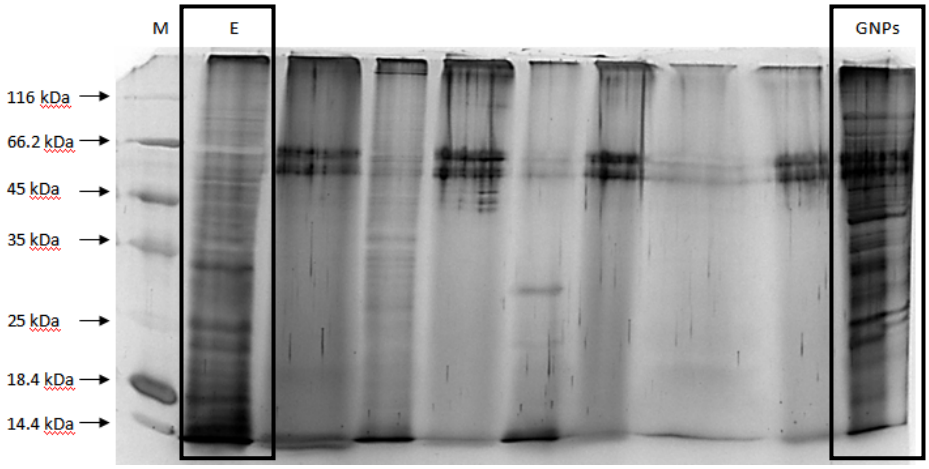


Fig. 1. Proton NMR signals from the samples – the upper one from the mint extract, the lower one of the nanoparticles.

Similar results were obtained after the electrophoresis, which revealed a lot of proteins present at the surface of the obtained GNPs (Fig. 2.).

Some proteins may stabilize the surface of formed nanoparticles, but not necessarily definite ones or in their native form (boiling of the extract or degradation of the proteins into smaller molecules using proteases does not disturb the synthesis). It seems that only some specific parts or functional groups are needed but not the proteins as the complete molecules.



M – Marker; E – Mint extract; GNPs - Gold nanoparticles synthesized using mint extract

Fig. 2. Proteins present in the mint extract and on the surface gold nanoparticles synthesized using mint extract separated by SDS-PAGE and visualized by silver staining.