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BOOK OF ABSTRACTS

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Study of the interactions between gold(III) complex containing 9,10-diaminophenanthrene and DNA

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Abstract

Since platinum medicines are often thought to target DNA and RNA, these molecules have been the primary focus of mechanistic studies for different gold complexes. Still, there are significant differences in the mechanisms underlying cisplatin and gold(III) complexes. Also, the reason why gold(III) complexes react faster with DNA than with the other biomolecules, is yet unknown (Lu, 2022). The study of the interactions between gold(III) complex containing 9,10-diaminophenanthrene (DAP) and DNA was performed by UV-Vis spectrophotometry, fluorescence spectroscopy and viscosity measurement. Based on the results of UV-Vis spectrophotometry can be concluded that complex binds to DNA. According to the results obtained by fluorescence spectroscopy and by viscosity measurement, the covalent binding mode between complex and DNA was confirmed.

DNA molecules are mainly target for the number of drugs, particularly in the case of cancer. In many previously studied instances, the drug molecules bind to DNA via electrostatic, hydrogen-bonding or π - π stacking interactions. For small compounds, like metal complexes, intercalation or minor groove binding are the main binding mechanisms. The potential for DNA damage is typically connected with the cytotoxic effect of metal complexes, which prompted thorough examination of interactions with this essential molecule. Some published results confirmed the link between the interactions of different gold(III) complexes with DNA and their cytotoxic effect, as well as the much faster interactions between DNA and gold(III) complexes than with cisplatin (Pages, 2015).

References

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