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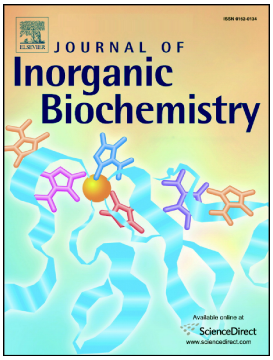

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Titanocene Binding to Oligonucleotides

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Abstract

The binding of titanocene to DNA and RNA was examined by means of electrospray mass spectrometry. Titanocene served as a model for its therapeutically active derivatives. The binding preferences were probed by competition experiments with oligonucleotides of varying nucleobase compositions and sequences. Results from competition experiments revealed a generally increased preference for the binding to phosphate groups adjacent to thymidines, which is affected by the nucleobase sequence of T-rich oligonucleotides. More detailed information about the binding sites was obtained from tandem mass spectrometric experiments. The binding of the transition metal coordination center significantly altered the fragment ion patterns of the oligonucleotides. RNA was found to be less prone to adduct formation, due to intramolecular interactions. The findings from experiments on DNA and RNA were complemented by the examination of backbone- and ribose-modified oligonucleotides.