

CEEC-TRAC4

BOOK OF ABSTRACTS

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**4th Central and Eastern European Conference
on Thermal Analysis and Calorimetry
28-31 August 2017
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Synthesis and investigation of the cytotoxic activities and the thermal behaviour of dichlorobis(pyridine derivatives) platinum(II) complexes

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Biological activities of pyridine derivatives have been successfully studied for various biological actions. Metal halide complexes of pyridine derivatives such as 2-chloropyridine, 2-bromopyridine, 3-chloropyridine, 3-bromopyridine, 2-methoxypyridine, 2-(p-tolyl) pyridine, 2-methylpyridine, 3-methylpyridine, 3,4-dimethylpyridine, 4-benzoylpyridine, 3-hydroxypyridine, 4-ethylpyridine have been extensively studied [1]. However, the antitumor activities of these halide complexes have received less attention in the literature [2].

In this study, complexes with the general formula $[PtCl_2L_2]$ (L: 3,4-dimethylpyridine, 2-amino-3-methylpyridine, 2-amino-5-bromopyridine, 2-floropyridine) were synthesized and characterized via FT-IR, UV-Vis, ¹H-NMR, ¹³C-NMR techniques. While the thermal behavior of the compounds was investigated via DTA/TG combined system, their kinetic parameters were investigated by using Flynn-Wall-Ozawa (FWO) and Kissinger-Akahira-Sunose (KAS) methods. The activation energies of the complexes were calculated to be 31,72- 196,54 kJ/mol for FWO and 29,17-203,43 kJ/mol for KAS.

The cytotoxic effect of the complexes against the colon cancer cell line (DLD-1), which is one of the most common types of cancer observed both in humans and animals, was investigated. The complexes showed high cytotoxicity. Especially, $[PtCl_2(2-floropyridine)_2]$ and $[PtCl_2(2-amino-3-methylpyridine)_2]$ complexes were found to be the most effective compounds against colon cancer cell line during the 24 hours incubation period.

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