

CYTOTOXIC ACTIVITY OF NEW DINUCLEAR PALLADIUM(II) COMPLEXES

Rajković S.,^a Živković M.D.,^b Franich A.A.,^a Milovanović J.,^{c,d} Djordjević D.,^{c,b}
Milovanović M.,^c Djuran M.I.^e

^a *University of Kragujevac, Faculty of Science, Department of Chemistry,
R. Domanovića 12, 34000 Kragujevac, Serbia,
e-mail: snezana@kg.ac.rs*

^b *University of Kragujevac, Faculty of Medical Sciences, Department of Pharmacy, S. Markovića 69,
34000 Kragujevac, Serbia*

^c *University of Kragujevac, Faculty of Medical Sciences,
Center for molecular medicine and stem cell research, S. Markovića 69, 34000 Kragujevac, Serbia*

^d *University of Kragujevac, Faculty of Medical Sciences, Institute of Histology,
S. Markovića 69, 34000 Kragujevac, Serbia*

^e *Serbian Academy of Sciences and Arts, Knez Mihailova 35, Belgrade, Serbia*

As a continuation of our ongoing interest towards the coordination chemistry of polynuclear transition metal complexes with bridging nitrogen-containing heterocyclic ligands,¹ in the present paper we report the synthesis, spectroscopic characterization, and in vitro cytotoxic activity of three new dinuclear palladium(II) complexes, [$\{\text{Pd}(\text{en})\text{Cl}\}_2(\mu\text{-}4,4'\text{-bipy})\}(\text{NO}_3)_2$ (**Pd1**), [$\{\text{Pd}(\text{en})\text{Cl}\}_2(\mu\text{-bpa})\}(\text{NO}_3)_2$ (**Pd2**) and [$\{\text{Pd}(\text{en})\text{Cl}\}_2(\mu\text{-bpe})\}(\text{NO}_3)_2$ (**Pd3**) (4,4'-bipy, bpa and bpe are 4,4'-bipyridine, 1,2-bis(4-pyridyl)ethane and 1,2-bis(4-pyridyl)ethylene, respectively, while en is a bidentate coordinated ethylenediamine). The structures of these complexes were confirmed by elemental microanalyses, NMR (¹H and ¹³C), UV-Vis and IR spectroscopy. Antitumor activity of these complexes against human (A549) and mouse lung cancer (LLC1) cells was evaluated by MTT assay and flow cytometric analysis of Annexin V, propidium iodide, and Ki67 stained treated cells. All palladium(II) complexes exhibited dose-dependent strong cytotoxic activity against A549 and LLC1 cells, similar to the activity of cisplatin. These complexes also exhibited strong apoptotic effect in LLC1 cells. Complex **Pd1** showed antiproliferative effect and significantly decreased percentage of LLC1 cells expressing Ki67.

References

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