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NEW NON-PLATINE COMPOAUNDS WITH STRONG ANTICANCER ACTIVITY

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There are more than thirty years after the first approval of cis-platin in the clinic against a number of cancer diseases. Cis-platin and related compounds continue to be among the most efficient anticancer drugs used so far. Efforts are now focused to develop novel platinum- and non-platinum-based antitumor drugs and small molecules[1] to improve clinical effectiveness, to reduce general toxicity and to broaden the spectrum of activity.

DNA is a main target for the therapeutic treatment of various disorders and diseases. It can interact with many biomolecules and synthetic compounds including :

- Alkilants agents
- Intercalants agents
- Antimetabolits agents
- Immunosuppressers agents

Finally it should be mentioned that some of the new compounds possessing chemical and biological properties related to those of cisplatin, might be very active, but show weak binding or no binding at all to DNA. Lots of other metal compounds may be shown to be active in cancer treatment, and may primarily interact with other biological targets.

The design and development of DNA-binding metal-containing drugs, requires detailed coordination-chemistry knowledge of the M-DNA binding processes, regarding structure, thermodynamics and kinetics. During the last decade, others and we have been giving attention to new approaches, like bifunctionality. This approach had started with attention to hydrogen bonding as a secondary interaction, and has developed towards attached intercalators, attached co-drugs and a second (or third) metal, all with a major aim to avoid resistance development or synthesis of tumour-specific drugs.

Also underdeveloped, but less directly related to DNA binding, is the control of the toxic side effects; development of the coordination chemistry of compounds with rescue and protective agents (usually S-donor ligands [2]) and especially the reactions of these compounds with other cellular components and their cell-wall transport needs serious attention. More directly related to DNA binding of metal compounds is the migration of complexes along the DNA chain

[1].Gulea A., Poirier D., Roy J., J.Enz.Inhib.Med.Chem., 2008 , V. 23. Nr.6, pp.806-818.
[2]. Roşu T., Negoiu M. Păsculescu S., Pahonţu E., Poirier D**., Gulea A.** / Eur. J.Med.Chem.. 2010, v. 45 , pp. 774-781.