R5

Comparison (Nature and Biological Activity) between two New Blue Species Involving, respectively, Malonamide and Succinamic Acid as Ligands

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Although the preparation of blue platinum complexes is generally achieved through the reaction of a ligand involving a –HN–CS– group with the hydrolysis products of *cis*-$Pt(NH_3)_2Cl_2$, blue species may be obtained using M_2PtCl_4 as platinum precursors. Two new blue species involving malonamide and succinamic acid have been prepared according to this process.

They display the main characteristics of the blue species, *i.e.*: an absorption near 660 nm in their visible spectrum, a paramagnetic behaviour (EPR signal) and platinum atoms in a nonintegral oxidation state. In both cases, solid state infrared spectroscopy gives evidence of coordination through the deprotonated amido groups.

The two species have been tested for antitumor activity and toxicity using Sarcoma 180 in mice. Examination of test data shows important differences between the two compounds. For instance, malonamide blue does not significantly improve the median survival time (T/C) at doses up to 1100 mg/Kg body w. while a single dose (150 mg/Kg) of the succinamic acid species produces a 189% T/C (10% survivors).

The analytical data and the physico-chemical properties of the two blue species are considered with the aim of suggesting likely explanations of the differences observed in their biological properties.

R6

Syntheses and Properties of Platinum Group Metal Complexes with 1,4-Benzodiazepines as Ligands

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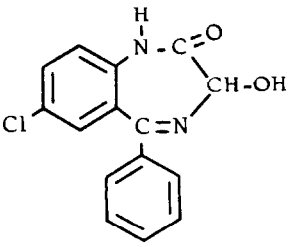
Following our interest in the chemistry of 1,4-benzodiazepines [1–4], we report the results of the study of the derivatives of rhodium(III), iridium(III), palladium(II) and platinum(II) halides with Oxazepam, 7-chloro-1,3-dihydro-5-phenyl-3-hydroxy-2H-1,4-benzodiazepin-2-one [5]:



The study of the stereochemistries and of the chemical reactivity of coordination compounds of benzodiazepines will help to determine what relationship exists between chemical structure and biological activity of these drugs, in the belief that metal complexes of ligands having biological activity are more active than the free ligands.

The obtained complexes, of the type ML_3X_3 (M = Rh, Ir; X = Cl, Br, I) and ML_2X_2 (M = Pd, Pt; X = Cl, Br, I), have been studied and characterized through vibrational and electronic spectra, ^1H and ^{13}C n.m.r. studies, conductivity measurements and magnetic susceptibility data. Furthermore, the complexation effects of the transition metal ions on the conformation of the diazepine ring are discussed.

The results will be discussed in detail and compared with those obtained for other metal complexes with the same ligand and for a long series of benzodiazepines in the free and complexed form.

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R7

NMR and INDO Study of the Ni(II) Complexes of Some Bidentate Ligands

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The joint use of NMR spectroscopy and quantum mechanical calculations proved a powerful tool for investigating the conformational and electronic properties of various ligands complexes to paramagnetic metal ions.