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PS6.17 — MO

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TUMOR LOCALIZING METAL COMPLEXES

We reported [1] that the radioactivity was concentrated in tumor tissues in experimental animals a few hours after the administration of the complexes of ethylenediamine-*N,N*-diacetic acid (EDDA) and related chelating agents with ^{99m}Tc . The tumor tissues were clearly visualized in scintigrams [2].

Complexes of EDDA with other radioactive metal ions and ^3H -labeled EDDA were prepared and the biodistribution of the radioactivity in mice bearing Ehrlich tumor was studied. The tumor/blood and tumor/muscle ratios of the radioactivity indicated that ^{57}Co EDDA was concentrated in the tumor tissues. The higher affinity for the tumor was noted with μ -oxo ^{57}Co EDDA, which was prepared by treatment of ^{57}Co EDDA with hydrogen peroxide. The ^{51}Cr , ^{59}Fe , ^{64}Cu and ^{67}Ga complexes of EDDA as well as ^3H -labeled EDDA were not concentrated in the tumor.

The tumor localizing EDDA complexes (^{99m}Tc EDDA and μ -oxo ^{57}Co EDDA) and related radioactive compounds, which are not tumor localizing, were injected intravenously to rats. The compounds studied were $\text{Na}^{99m}\text{TcO}_4$, $^{57}\text{CoCl}_2$, and the complexes of *N'*-acetythylenediamine-*N,N*-diacetic acid (AcEDDA) with ^{99m}Tc and ^{57}Co . Hepalinized blood was collected 1 h after the injection and was analyzed by density gradient centrifugation and dialysis.

Most of the radioactivity was present in blood plasma and cellular fractions contained less than 10% of the radioactivity. Results of dialysis of the blood against physiological saline were significantly different between the tumor localizing and not localizing complexes. Most of the radioactivity was dialyzable in the blood of rats administered with $^{99m}\text{TcO}_4^-$ and more than 80% was dialyzed in 24 h in those of the EDDA complexes. In those of the other radioactive compounds, more than 60% radioactivity was remaining undialyzed indicating that the radioactivity was firmly bound to plasma proteins.

The radioactive compounds were administered to mice bearing Ehrlich tumor. The tumor tissues were removed at selected times, homogenized, separated into nuclear, mitochondrial, microsomal, and supernatant fractions by centrifugation, and measured the radioactivity of the fractions. The results showed that the EDDA complexes were concentrated in the nuclear fraction, whereas the other compounds in the supernatant fraction. From the results above mentioned, the following conclusions may be drawn on the tumor localizing EDDA complexes. The EDDA complexes of ^{99m}Tc and ^{57}Co were not firmly bound to plasma proteins *in vivo*. Hence they were rapidly transferred into tumor tissues and rapidly cleared through kidneys from blood. Relatively high radioactivity in tumor tissues and low radioactivity in blood should give clear scintigrams of the tumor tissues.

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PS6.18 — TU

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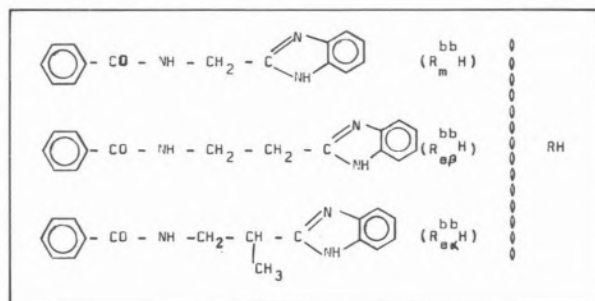
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SYNTHETIC, STRUCTURAL AND ANTIBACTERIAL SCREENING STUDIES OF Co(II), Ni(II) AND Cu(II) COMPLEXES WITH BENZIMIDAZOLE DERIVATIVES

Recently several benzamido benzimidazoles have been synthesised and some of the compounds are found to be active against gram +ve microorganisms [1] whereas corresponding sulphonamido benzimidazoles which can function as chelating agents [2] are active against gram -ve microorganisms [3]. Now metal complexes of the type $M(RH)_2Cl_2$ [$M = Co(II)$, $Ni(II)$ and $Cu(II)$] have been prepared and characterized by IR, PMR and electronic spectra, conductivity and magnetic moment data.



All the $Cu(II)$ complexes show low magnetic moment values at room temperature which suggests antiferromagnetic interaction between two $Cu(II)$ centres bridged by chloride [4,5]. The presence of

chlorine bridged structure is indicated by IR data. Magnetic moment data and electronic spectra of $Co(II)$ complexes support tetrahedral structure [6,7]. $Ni(R_{m}^{bb}H)_2Cl_2$ and $Ni(R_{e\beta}^{bb}H)_2Cl_2$ are polymeric in nature and possess octahedral stereochemistry. Due to the presence of a CH_3 group in $R_{e\alpha}^{bb}H$, polymerisation is sterically hindered and $Ni(R_{e\alpha}^{bb}H)_2Cl_2$ is assumed to be in octahedral \rightleftharpoons planar equilibrium and low magnetic moment value is observed [8].

These metal complexes are active against gram +ve and gram -ve microorganisms and the activity is more than the free ligand or metal ion. $Co(II)$ complexes are found to be more active than $Ni(II)$ and $Cu(II)$ complexes.

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