BLM.[cis-$Pt(NH_3)_2Cl_2$] system

The interaction of *cis*-DDPt with BLM is very slow and incomplete. After one week, at pH 7, only 30% of the 1:1 complex is obtained.

Antitumor activity of the BLM-CisDDPt complex

A mixture containing BLM and *cis*-DDPt in a 3:1 molar ratio was used. In that conditions we have estimated that all the Pt(II) ions are complexed to BLM. The mixture has been screened for anticancer activity against Lewis pulmonary carcinoma and L 1210 leukemia in a comparative study with BLM and *cis*-DDPt respectively. The percentage of inhibition by the BLM-*cis*DDPt (1:1) complex is reduced to 65% and 55% with regard to free BLM and *cis*-DDPt respectively.

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PS6.4 — MO

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ALUMINIUM COMPLEXES WITH PICOLINIC ACID

Aluminium has long been regarded biologically inert, but the aluminium absorption and consequent accumulation in the brain of patients with dialysis dementia is now well documented [1]. Aluminium intoxication has also been implicated in various neurological disorders such as Alzheimer dementia. Little is known about the mechanism of aluminium uptake. It is supposed that only dissolved aluminium is able to cross the mucosa barrier in the gastrointestinal tract [2]. Experiments with rats fed on diets containing suboptimal levels of zinc and elevated levels of aluminium showed increased aluminium concentrations in the rat brains. Probably aluminium in gut competes for binding sites on zinc or iron binding ligands. Investigation has showed that picolinic acid (2-pyridiniumcarboxylic acid) probably plays an important role in the absorption process of zinc [3]. The aim of the present work is to investigate the ability of aluminium to form complexes with picolinate ions.

EXPERIMENTAL

Potentiometric titrations with glass electrode were performed in 0.150 M KNO_3 at 25.0°C. Concentration of each component were of the order 10^{-3} M. The metal-to-ligand ratio varied between 1:1 and 1:4, and the mixtures were titrated in the pH range 3 to 7.

RESULTS AND DISCUSSIONS

The equilibrium analysis of the present system shows that the major aluminium-picolinate species are AlL_2^+ and $AlL_2(OH)$ with $\log(\beta_{1\,2\,0} \pm 3\sigma) = 8.27 \pm 0.02$ and $\log(\beta_{1\,2\,-1} \pm 3\sigma) = 17.668 \pm 0.008$ respectively in mixtures with excess of picolinate (L^-).

In a 1:1 mixture the species AlL^{2+}, $\log(\beta_{1\,1\,0} \pm 3\sigma) = 4.497 \pm 0.007$ and $Al_2L_2(OH)_3^+$, $\log(\beta_{2\,2\,-3} \pm 3\sigma) = 39.27 \pm 0.02$ dominated. Minor species in the system are $AlL(OH)^+$ and $AlL_2(OH)$.

The least squares computer calculations were performed with the program TITRER [4]. Distribution diagrams visualizing the relative amounts of the different species were produced using the program DISTPLOT.

The results of the present investigation show that competitive interaction between aluminium and zinc is possible.

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PS6.5 — TU

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UROHEMIN INTERACTION WITH THE ANTIMALARIAL DRUGS CHLOROQUINE AND QUININE

INTRODUCTION

Despite numerous years of research the actual mode by which antimalarial drugs operate remains obscure. Recently though, it has been proposed that drugs such as chloroquine and quinine form complexes with the protoporphyrin IX of hemoglobin inside red blood cells [1]. The precise mechanism is unknown, but presumably the complexes are formed with the heme that has been released from proteolytically digested hemoglobin. It has also been suggested that protohemin IX is a specific receptor for several malaria drugs and the cause of the rapid uptake of these drugs by the erythrocyte. Due to this implied high affinity of ferric porphyrins for antimalarial drugs, we have begun binding studies in aqueous solution. In this report we present some of our initial results concerning the interaction of chloroquine and quinine with iron porphyrins in aqueous solution. Urohemin-I was chosen due to its high solubility in aqueous solutions and because recent Raman and Nuclear Magnetic Resonance (NMR) work allowed us to thoroughly characterize its solution dynamics [2,3].

EXPERIMENTAL

Urohemin was purchased from Porphyrin Products, Logan, Utah, and was further purified by column chromatography as previously described [2]. Chloroquine and quinine were purchased