such as those reported by Reid[5]. These points will require further investigation.

It should be noted that, although ethyl iodide is well known to undergo photolysis in strong ultraviolet light, no appreciable decomposition was found under the conditions of the present work.

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Rate of Ligand Exchange with its Metal Complex by a Polarimetric Method

Optically active 1,2-propylenediamine tetraacetic acid[1] (H_4PDTA) co-ordinates in a completely stereospecific manner[2] with Co(III), Rh(III) and Cr(III). Courtauld models of either co-ordinated optical isomer show the methyl group to be sterically hindered for one configuration of the metal complex irrespective of whether the ligand is attached at 4 (non-planar), 5 or 6 points to the metal atom. The absolute stereospecificity of complex formation provides a simple polarimetric method of measuring the exchange-rate of the free ligand with its metal complexes.

Equivalent amounts of the metal complex containing one optical form of the ligand and the free optical antipode were mixed in buffered aqueous solution, and the rate of loss of optical activity determined.

$$[M\ d\text{-PDTA}]^{n-} + l\text{-PDTA} \rightleftarrows [M\ l\text{-PDTA}]^{n-} + d\text{-PDTA}$$

It will be evident that the rotation will have fallen to zero when half the ligand is exchanged. The concentrations of unreacted initial complex and the added free ligand at any time may be calculated from the observed rotation and the respective initial rotations before mixing. In general, there is a considerable difference between the rotatory powers of the free ligand and the metal complex even when the latter is colourless. The difference may be magnified by a suitable choice of the wave-length of the light when the complex is coloured.

Preliminary studies of the rate of exchange of the cadmium complex with the ligand have shown a first-order dependence on both complex and ligand at *p*H 6. The approximate specific rate constant at 20° C. was found to be 0·07 l.-moles^{-1}-sec.$^{-1}$. During the reaction, the rotation changed from − 0·66° to zero for 0·005 *M* solutions of complex and ligand in a 20-cm. tube.

Table 1

Complex	*p*H	Time for half-exchange with *l*-PDTA
[Ni(*d*-H_2.PDTA)]	0·70	30 min.
	2·90; 6·40	No exchange in 3 days
[Cu(*d*-H_2.PDTA)]	2·90	< 1 min.
	6·40	16 hr.
[Cd(*d*-H_2.PDTA)]	2·90	< 40 sec.
	6·30	1 hr.
[Zn(*d*-H_2.PDTA)]	2·90	< 40 sec.
	6·32	3 hr.
[Ca(*d*-H_2.PDTA)]	7·30	< 1 min.
[Al(*d*-H.PDTA)]	2·90	20 hr.
[Y(*d*-H.PDTA)]	2·90	< 1 min.
[Mn(*d*-H_2.PDTA)]	3·00	< 1 min.
	6·30	5 min.
[Co(*d*-H_2.PDTA)]	2·90	< 1 min
	6·30	7 days
[Fe(*d*-H.PDTA)]	0·7	7 hr.
	6·5	No exchange in 2 days

The approximate times for exchange between half of the PDTA and a number of its metal complexes at 20° C. are shown in Table 1. The metal complexes were prepared in the acid forms, [*M*(H_2.PDTA)], or [*M*(H.PDTA)] by reaction between the metal acetate and active propylenediamine tetraacetic acid and, after recrystallization, dissolved in the appropriate buffer solution. The complexes like those with ethylenediamine tetraacetic acid are either quinquidentate or sexadentate. Detailed studies will be published later.

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BIOCHEMISTRY

Specific Detection of Glucose on Paper Chromatograms

Mixtures of monosaccharides derived from complex polysaccharides often present difficulties in identification when the compounds migrate close to one another on paper chromatograms. Difficulties of this kind have been encountered with certain bacterial polysaccharides containing glucose, galactose and heptoses. With the use of the glucose oxidase[1]-indicator reagent, 'Glucostat' (Worthington Biochemical Corporation) it has been possible to locate specifically the glucose and then reveal other monosaccharides on the same paper chromatogram.

Monosaccharides were separated on Whatman paper No. 1, with the *n*-butanol–pyridine–water (6 : 4 : 3 v/v) solvent system, the paper chromatograms dried in air and then sprayed with the 'Glucostat' reagent prepared as for the quantitative estimation of glucose in biological fluids[2]. As the 'Glucostat' reagent is in the form of a buffered, aqueous solution, flooding of the paper chromatograms was avoided to prevent spreading of the various monosaccharides. When sugars were separated with acidic solvents such as *n*-butanol–acetic acid–water (6 : 1 : 2 v/v) the chromatograms were steamed for 5–10 min. before spraying. The indicator dye, *o*-dianizidine, in the 'Glucostat' reagent locates the glucose by turning a permanent pinkish-brown colour. The colour develops rapidly at room temperature and no further treatment is necessary. The method readily detects 10–20 μgm. glucose separated