The results of these and other work on the metabolic behaviour of collagen will be published in detail elsewhere.

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Copper(II) Complexes of Histamine and 3-Methyl Histamine

In previous communications from this laboratory[1–3] evidence has been presented that acid dissociations occur from the 1 : 1 cupric complexes of histidine and histamine. In the presence of equimolar cupric chloride, one equivalent of alkali additional to that needed by either of the ligands alone is required to titrate all the acid produced. When the ligand/copper(II) ratio is 2 : 1 the amount of alkali required is the same as in the absence of the metal. From these facts it was concluded[2] that a co-ordinated water molecule and not the hydrogen attached to the unco-ordinated imidazole nitrogen was the source of the acid ionization from the 1 : 1 complexes. As a further test of this idea, we have investigated the copper(II) complexes of 3-methyl histamine.

Titration curves of 3-methyl histamine dihydrochloride in the absence and presence of cupric chloride are shown in Fig. 1. It can be seen that an acid ionization occurs from the 1 : 1 and not the 2 : 1 complex. Thus histamine and its 3-methyl derivative are similar in their co-ordinating properties with copper(II), and the interactions which occur may be represented thus :

$$Cu^{2+} + L \overset{K_1}{\rightleftharpoons} CuL^{2+} \quad (1)$$

$$CuL^{2+} \overset{K_c}{\rightleftharpoons} CuL^{+} + H^{+} \quad (2)$$

$$CuL^{2+} + L \overset{K_2}{\rightleftharpoons} CuL_2^{2+} \quad (3)$$

where

$$K_1 = \frac{[CuL^{2+}]}{[Cu^{2+}][L]}, K_c = \frac{[CuL^{+}][H^{+}]}{[CuL^{2+}]}, K_2 = \frac{[CuL_2^{2+}]}{[CuL^{2+}][L]}$$

The constants were calculated by the methods previously described[3] and the numerical values obtained did not vary significantly with pH (at 25° C. $pK_{a1} = 5{\cdot}80$, $pK_{a2} = 9{\cdot}90$, log $K_1 = 9{\cdot}58$, log $K_2 = 6{\cdot}56$, $pK_c = 7{\cdot}10$, where K_{a1} and K_{a2} are the acid dissociation constants of the ligand). These values are not very different from those reported for istamine[3].

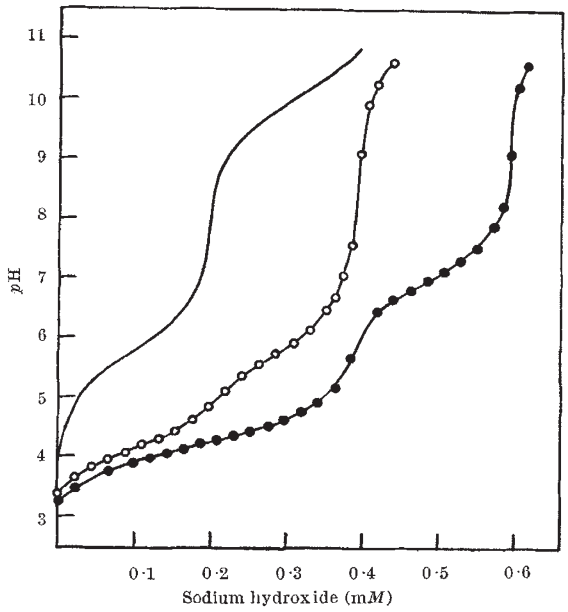

Fig. 1. Titration curves of 3-methyl histamine dihydrochloride (0·2 m*M* in 20 ml.) with sodium hydroxide (0·11 *N*): ——, no additions; —○—○—○—, plus 0·1 m*M* cupric chloride; --●—●--●—●--, plus 0·2 m*M* cupric chloride

The hydrogen attached to the unco-ordinated imidazole nitrogen cannot be the source of the acid dissociation from the histamine complex, since this hydrogen is not present in 3-methyl histamine and it is most unlikely that the two ligands differ in the nature of the complexes they form. The evidence, therefore, favours the previous suggestion that the acid dissociation (equation 2) occurs from a water molecule co-ordinated to the 1 : 1 complex, CuL^{2+}, or the equivalent process, the uptake by this complex of a hydroxyl ion.

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ANIMAL PHYSIOLOGY

Renal Affection resulting from Blood Trauma in Extracorporeal Circuits

Previously, we have presented evidence that as a result of the corpuscular blood trauma inherent to extracorporeal circulatory systems including the heart–lung machines, adenosine triphosphate and 5-hydroxytryptamine (serotonin) are released into plasma, the former being derived mainly from the hæmolysed red cells and the latter from the disintegrated platelets. Concurrently, the urinary excretion of 5-hydroxytryptamine was increased, while, rather unexpectedly, there was a reduction in the

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