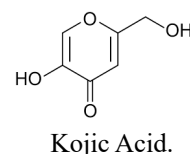


Crystal Structure and Magnetic Properties of Coordination Complexes with Hydroxypron Derivative, Kojic Acid

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Kojic acid, 5-hydroxy-2-hydroxymethyl-4H-pyran-4-one, $C_6H_6O_4$, is a molecule that is originated from malt of rice. Kojic acid has attracted attention because it shows a whitening effect of skins.¹ A metalloenzyme, tyrosinase, involves a first step of formation of melanin pigments that cause skin blemish.² Kojic acid suppresses the activity of tyrosinase by coordinating to its copper ions existing in the active center of the enzyme. In this study, we report preparation, crystal structures and magnetic properties of the coordination complexes composed of kojic acid molecules and some metal ions such as copper ion and cobalt ions.



It is reported that the metal complexes of Kojic acid were prepared by reactions of its sodium salts and metal salts, and were obtained as powder, except for ReO(V) and Fe(III) derivatives.^{3,4} In this study, we succeeded to obtain single crystals of the copper **1** and cobalt derivatives **2** by slow evaporation from diluted aqueous solutions including Kojic acid and appropriate metal salts. Figure 1 shows the crystal structure of **1**, $[Cu(C_6H_5O_4)_2]$. The crystal parameters are as follows: *monoclinic* $P2_1/c$, $a = 11.9468(17)$, $b = 6.7247(7)$, $c = 15.314(2)$ Å, $\beta = 110.221(3)^\circ$, $Z = 4$, $R = 6.47\%$. The copper ions existed in square pyramidal sites. The equatorial positions of the copper ion were chelated by two kojate ions. One of the axial positions was coordinated with the oxygen atom of the 2-hydroxymethyl group of the other chelate molecule, and a one-dimensional coordination polymer network toward the b axis was formed. In this presentation, we will show detailed crystal structures and magnetic properties of **1** and the cobalt derivative **2**.

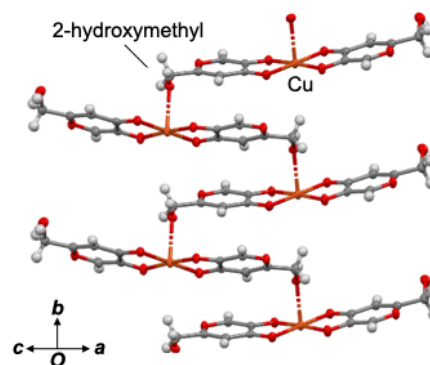


Figure 1. The coordination network of **1**.

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