



Hence, angular methyl group is usually removed by dehydrogenation and the most likely structure for desacylcynanchogenin appeared to be the carbon skeleton of c-nor-D-homo-pregnane (II). Further work on the structure of cynanchogenin is in progress.

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α -Lipoic Acid-Thiourea Adduct

α -Lipoic acid-thiourea adduct was obtained by crystallization of a mixture of α -lipoic acid and thiourea from butanol or by standing the mixture with a trace of methanol in a plugged flask at 40° for 4 days.

The adduct is odorless, slightly yellow, needle crystals and decomposes at 158°. The adduct consists of 1 mole of α -lipoic acid and 6.3 moles of thiourea, and the ratio is determined by elementary analysis, ultraviolet absorption spectrum, and polarography.

Infrared spectrum of the adduct closely resembles those of thiourea inclusion compounds of cyclohexane,¹⁾ isoöctane,²⁾ camphor, 9-oxocamphor,³⁾ ascaridol,¹⁾ etc. The α -lipoic acid in the adduct is extracted with ethanol, leaving behind rhombic thiourea.

From these data, the thiourea adduct of α -lipoic acid may be considered as an inclusion compound of thiourea. However, X-ray powder diffraction pattern of the adduct differs from those of typical inclusion compounds of thiourea. To confirm the crystal system of the adduct, X-ray photographs of a single crystal were taken and following data were obtained.

Crystal system : Monoclinic

Space group : $C_{2h}^5 - P2_1/a$

Unit cell :
a = 5.27 Å
b = 14.71 Å (needle axis)
c = 11.9 Å
 $\beta = 113.0^\circ$

It is very interesting to note that the crystal system of this adduct differs from those of hitherto known thiourea adducts which belong to rhombohedral $D_{3h}^6 - R\bar{3}c$ group.

As the adduct is odorless and α -lipoic acid is very stable in the adduct, it might be convenient to use it for the preparation of powder or tablets containing α -lipoic acid.

Details of these experiments will be published in the near future.

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- 1) H. Mima : Yakugaku Zasshi, **78**, 993(1958).
- 2) Stewart : J. Chem. Phys., **26**, 248(1957).
- 3) H. Mima : Yakugaku Zasshi, **77**, 1196(1957).