Proc 2nd Joint Annual Conference of Biomedical Science, Taipei, 1987;p.95.

29. ANTHRAQUNONE GLYCOSIDES FROM POLYGONUM CUSPIDATUM SIEB ET. ZUCC

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The bark of Polygonum cuspidatum Sieb et. Zucc has been known as a folk medicine in China and Taiwan. Two new anthraquinone glycosides 1 and 2 have been isolated from the bark of P. cuspidatum. Their structures have been determined by the spectroscopic, chemical and enzymatic reactions. The structure determination as well as their biological activity of other anthraquinone type compounds from P. cuspidatum will also be discussed.

⊙ 30. DETERMINATION OF GALACTOSE-1-PHOSPHATE URIDYLTRANSFERASE IN HUMAN ERYTHROCYTES FOR DIAGNOSIS AND HETEROZYGOTE DETECTION OF GALACTOSEMIA.

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Congenital galactosemia is an autosomal recessive disease. Most galactosemia is caused by a deficiency of galactose-1-phosphate (Gal-1-P) uridyltransferase. Early diagnosis and institution of a galactose-free diet will prevent mental retardation, liver damage, and blindness. An isotope method has been established to determine the enzyme activity in erythrocytes. The hemolysate was incubated with the substrates, ^{14}C-Gal-1-P and UDP-Glucose, for 1 hour at 37°C. After the reaction was stopped by heating to 100°C, alkaline phosphatase was used to hydrolyze excess Gal-1-P. 20ul of the final reaction mixture was then applied to a DEAE paper strip, and the product, ^{14}C-UDP-galactose, was purifed by chromatographic elution. The amount of ^{14}C-UDP-galactose remaining at the origin was determined by a β-counter. The reference range of erythrocyte Gal-1-P uridyltransferase activity in Chinese is estimated to be 290-470 mU/gHb. The enzymic activity of a galactosemic newborn, detected by neonatal screening of blood galactose, was determined to be 0.04 mU/gHb. The parents (obligatory heterozygotes) had the activity at 48.0 mU/gHb and 156.0 mU/gHb. The enzymic activity of the patient's brother was 168.9 mU/gHb, which indicates that he might be a heterozygote. The results suggest that this method can be used for confirmatory diagnosis and heterozygote detection of galactosemia.