ACUTE AFLATOXICOSIS IN THE RATS PRETREATED WITH CORTISOL AND OVRAL 28

BY

POCHANA SRICHUAY

A THESIS SUBMITTED IN PATIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
(TOXICOLOGY)

IN THE

FACULTY OF GRADUATE STUDIES
OF
MAHIDOL UNIVERSITY

1987

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POCHANA SRICHUAY

Toxicology Program, Department of Physiology, Faculty of Science, Mahidol University, Rama VI Road, Bangkok 10400, Thailand

ABSTRACT

Daily s.c. injection of cortisol at various doses (1.0, 2.5, 5.0 and 10.0 mg/kg BW) for 7 consecutive days caused an enhanced effect on aflatoxin B_1 (3.0 mg/kg BW) induced hepatic necrosis. At high doses of cortisol (5.0 and 10.0 mg/kg BW) pretreatment, AFB_1 produced a marked increase in mortality rate by 60 and 80% respectively within 48 hours. Its enhanced effect on hepatotoxicity of AFB_1 treatment, cortisol (10.0 mg/kg BW) enhanced AFB_1-induced hepatotoxicity by raising the activity of PGPT to 5.8 folds, PGOT to 7.8 folds and liver triglyceride to approx. 2.0 folds. Cortisol also significantly increased the activity of aniline hydroxylase from 6.34 ± 0.42 to 10.66 ± 1.05 µg p-aminophenol formed/20 min/g liver ($P < 0.01$) and slightly decreased the activity of p-nitroanisole-o-demethylase from 4.64 ± 0.49 to 3.42 ± 0.30 µmoles p-nitrophenol formed/20 min/100 mg protein ($P < 0.05$), but it could not induce any change in the activity of NADPH cytochrome c reductase or hepatic GSH content. However, cortisol seemed to have an interesting action to increase AFB_1-induced hepatic lipid peroxidation from 48.60 ± 4.82 to 134.11 ± 12.80 µg MDA/g liver ($P < 0.005$). It is possible that cortisol pretreatment causes an increase in AFB_1 active metabolite (AFB_1-2, 3-epoxide) formation resulted from an elevation of mixed function oxidases

which leads to membrane damage of endoplasmic reticulum, mitochondria, and lysosomes by lipid peroxidative process. In contrast, oral administration of 100 µg Ovral-28 for 16 consecutive days prior to a single i.p. aministration of AFB_1 (3.0 mg/kg BW) did not change the severity of hepatic necrosis induced by AFB_1