

TISSUE LIPID VARIATIONS UNDER LONG TERM
DIETHYLSTILBESTROL ADMINISTRATION

by

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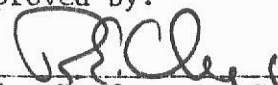
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TABLE OF CONTENTS

	Page
LIST OF TABLES	ii
LIST OF FIGURES	iii
INTRODUCTION	1
LITERATURE REVIEW	2
MATERIALS AND METHODS	5
Treatment of Animals	5
Blood Serum	5
Extraction of Lipids from Tissues	6
Thin Layer Chromatography	7
Gas Liquid Chromatography	8
Statistical Analysis	8
RESULTS AND DISCUSSION	9
SUMMARY	42
ACKNOWLEDGEMENTS	44
BIBLIOGRAPHY	45

107

LIST OF TABLES

		Page
TABLE 1	LIPIDS IN THE TISSUES OF ADULT AND YOUNG COCKERELS .	10
TABLE 2	PERCENTAGE OF FATTY ACIDS IN THE TISSUES OF ADULT AND YOUNG COCKERELS	12
TABLE 3	RESULTS OF THE MANN-WHITNEY STATISTICAL ANALYSES OF THE CONTROL VS THE DES TREATED BIRDS	15
TABLE 4	RESULTS OF THE MANN-WHITNEY STATISTICAL ANALYSES OF THE ADULT VS THE YOUNG COCKERELS	17

LIST OF FIGURES

	Page
FIGURE 1 LIPID AND FATTY ACID DISTRIBUTION IN BLOOD SERUM OF NORMAL AND DES TREATED COCKERELS 	22
FIGURE 2 LIPID AND FATTY ACID DISTRIBUTION IN HEART TISSUE OF NORMAL AND DES TREATED COCKERELS 	24
FIGURE 3 LIPID AND FATTY ACID DISTRIBUTION IN LIVER TISSUE OF NORMAL AND DES TREATED COCKERELS 	26
FIGURE 4 LIPID AND FATTY ACID DISTRIBUTION IN THIGH TISSUE OF NORMAL AND DES TREATED COCKERELS 	28
FIGURE 5 LIPID AND FATTY ACID DISTRIBUTION IN BREAST TISSUE OF NORMAL AND DES TREATED COCKERELS 	30
FIGURE 6 LIPID AND FATTY ACID DISTRIBUTION IN ADIPOSE TISSUE OF NORMAL AND DES TREATED COCKERELS 	32

INTRODUCTION

Much work has been aimed at the role of diethylstilbestrol (DES) as a carcinogen, as a growth factor in livestock and in the control of prostate carcinoma. Recent work has suggested that the variations in the serum lipid patterns brought about by the administration of large doses of DES for a limited time could be modified by high concentrations of ascorbic acid and vitamin E in the diet. This led to the question of what changes would occur, particularly in the tissues, of cockerels fed smaller doses of DES for an extended period. In the following study the effect of prolonged administration of lower levels of DES on the lipid composition of the tissues of rapidly growing and adult cockerels was investigated. Because of the large number of analyses the investigation was undertaken as a survey of the lipid variations and of the fatty acid distribution in each tissue selected. The results of this survey are to be used to plan future work, particularly work involving ascorbic acid and vitamin E.

LITERATURE REVIEW

Many investigators have studied the relationship of diet to the lipid changes in the blood serum and tissues of a variety of subjects. Only a few of these reports will be discussed. In all cases when enough lipid was added to the diet this change was reflected in the blood serum lipids, and in some cases in the tissues. Camejo et al. (4) reported early changes in the plasma lipoproteins in rabbits fed a high cholesterol diet. The cholesteryl ester of density less than 1.09 g/ml was the most prominent change. The lipoproteins of the cholesterol fed rabbits contained lipoproteins with a higher lipid-to-protein ratio. Corey et al. (7) concluded that the response of certain primate species to dietary changes in fat differed. For example, both cebus and squirrel monkeys were hypercholesterolemic on diets high in coconut oil, but only the squirrel monkeys were sensitive to extra cholesterol. Diets containing 10% safflower oil were not hypercholesterolemic. The source of plasma-free fatty acids was investigated by Heimberg (13). Human volunteers were fed either safflower oil or coconut oil, and the serum lipids compared. After safflower oil feeding the 18:2 in the free fatty acids increased. Similar observations were made in the triglycerides of the VLD lipoproteins. After coconut oil feeding the percentage of 12:0 and 14:0 increased in both the free fatty acids and the triglycerides. Renaud and Gautheron (21) fed cholesterol from a variety of fat sources and reported that the fats could be classified according to their atherogenicity as follows, in decreasing order: butter, olive oil, coconut oil, cacao butter and corn oil. The severity was correlated with the plasma cholesterol.

Guenter et al. (12) reported that in laying hens higher levels of dietary linoleic acid would increase egg yolk, liver and adipose tissue