SOME CHEMICAL AND BIOCHEMICAL STUDIES ON RAPESEED OIL

BY

HODA MANGOUD MOHAMED

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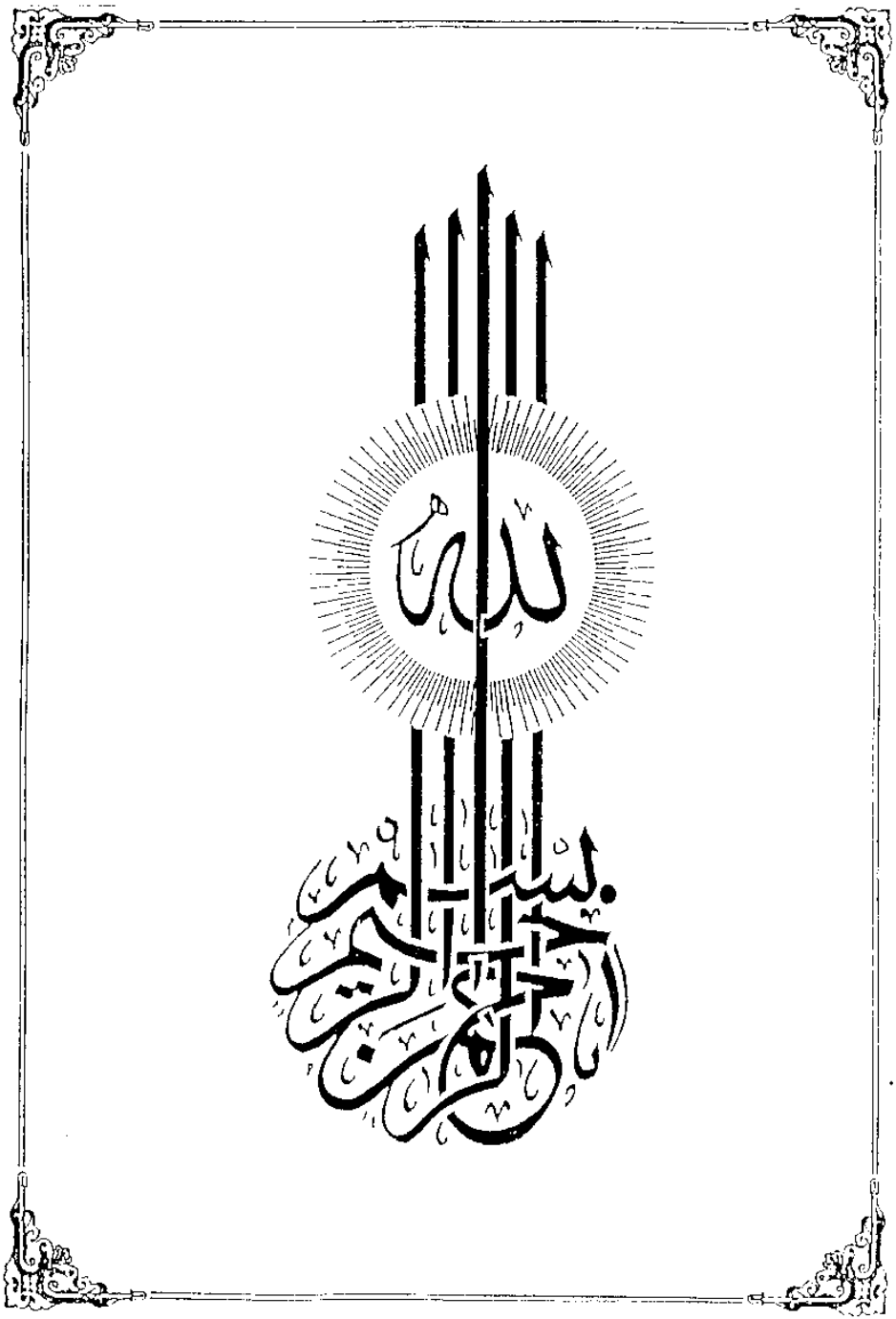
Thesis Supervisors:

Approved.

Prof. Dr. Emtithal A. El-Sawi.

Prof. Dr. Mohamed El-Ghorab.

Prof. Dr. Mohamed Fahmi Saddik.



CONTENTS

		PAGE
ACKNOWLEDGEMENT		
LIST OF TABLES		
LIST OF FIGURES		
SUMMARY		1
1.	GENERAL INTRODUCTION	5
2.	AIM OF THE WORK	10
3.	REVIEW OF LITERATURE	11
3.1.	World production	11
3.2.	Oil yielding	13
3.3.	Chemical compositon of fats and oils	15
3.4.	Chemical composition of Rapeseed and Cottonseed oil	18
3.5.	Physical and chemical properties	21
3.6.	Chemical and Physical changes in oil subiected to frying processes	30
3.7.	Factors affecting oil properties during heating	36
3.7.1.	Water	36
3.7.2.	Temperature	36
3.7.3.	Nature of fat	37
3.8.	Effect of dietary fat on lipid composition	39
3.9.	Digestibility of Rapeseed oil	43

Cont.

		PAGE
3.10.	Biological effects due to changes in oil	46
3.11.	Histological effects due to changes in oil	50
3.12.	Biological effects due to changes in oil during heating	56
3.13.	Histological effect due to changes in oil during heating	59
4.	MATERIAL AND METHODS	66
4.1.	Dietary fat	66
4.2.	Physical and chemical characteristics of oil	66
4.2.1.	Physical characterstics	66
4.2.1.1.	Moisture	66
4.2.1.2.	Measurement of colour	66
4.2.1.3.	Refractive index	67
4.2.1.4.	Specific gravity	67
4.2.2.	Chemical characteristics	67
4.2.2.1	Saponification number	67
4.2.2.2.	Iodine number	67
4.2.2.3.	Peroxide value	68
4.2.2.4.	Acid value	68
4.2.3.	Fatty Acid Profile	68
4.3.	Biochemical indices	69
4.3.1.	Determination of Haemoglobin	69
4.3.2.	Determination of Haematocrite	69
4.3.3.	Quantitative determination of lipid content	69
4.3.3.1	Determination of cholesterol ...	69
4.3.3.2	Determination of triglyceride ..	70
4.3.3.3.	Determination of phospholipide .	70

Cont.

		Page
4.4.	Biological investigation of the fat	70
4.4.1.	Animal and Diets	70
4.4.1.1.	Animals	70
4.4.1.2.	Diets	71
4.5.	Histopathological study	74
4.6.	Statistical Analysis	75
5.	RESULTS AND DISCUSSTION	77
5.1.	Physical and chemical characteristics of the oil	79
5.1.1	Physical characteristics of unheated and heated oil	79
5.1.2.	Chemcial characteristics of unheated and heated oil	80
5.2.	Fatty Acid composition of unheated and heated oil	86
5.3.	Food consumption and gain in body weight .	90
5.3.1.	Food consumption	90
5.3.2.	Body weight gained by rats fed diets containing different levels of oil ..	96
5.4.	Haemoglobin and Haematocrite levels in animals fed diets having different oil content	110
5.5.	Effect on feeding different types of oil on lipid pattern	114
5.5.1.	Cholesterol	114
5.5.2.	Serum phospolipide	121
5.5.3.	Serum triglyceride	125

CONT.

		PAGE
5.6.	Weight of liver, heart and kidney of rats fed diets containing different oils	130
5.6.1.	Effect on liver weight	130
5.6.2.	Effect on heart weight	134
5.6.3.	Effect on kidney weight	138
5.7.	Effect of diet containing different oils on the histology of some oranges of rats .	143
6.	CONCLUSION	212
7.	REFERENCES	213
8.	ARABIC SUMMARY.	

LIST OF TABLES

TABLE No.		PAGE
1	Experimental diet	72
2	Physical characteristics of the unheated and heated oils	78
3	Chemical characteristics of the unheated and heated oils	81
4	Fatty acid composition of the unheated and heated oils	85
5	Food efficiency of unheated and heated oils	91
5.1.	Food efficiency of unheated oils after 6 weeks	91
5.2.	Food efficiency of unheated oils after 16 weeks	91
5.3.	Food efficiency of heated oils	92
6	Effect of different levels of unheated and heated oils on the haematological parameters	109
7	Effect of feeding different types of oil on lipid pattern	115
8	Effect of different levels of unheated and heated oils on the weight of liver	131
9	Effect of different levels of unheated and heated oils on the weight of heart	135
10	Effect of different levels of unheated and heated oils on the weight of kidney	139

LIST OF FIGURES

FIGURE No.		PAGE
1	Growth rate of rats fed 10 % fresh oils after 6 weeks	97
2	Growth rate of rats fed 20 % fresh oils after 6 weeks	98
3	Growth rate of rats fed 10 % fresh oils after 16 weeks	102
4	Growth rate of rats fed 20 % fresh oils after 16 weeks	103
5	Growth rate of rats fed 10 % heated oils	105
6	Growth rate of rats fed 20 % heated oils	106
7	Effect of different levels of unheated and heated oils on serum cholesterol	116
8	Effect of different levels of unheated and heated oils on serum phospholipids	122
9	Effect of different levels of unheated and heated oils serum triglyceride	126
10	Effect of different levels of unheated and heated oils on the weight of liver	132
11	Effect of different levels of unheated and heated oils on the weight of heart	136
12	Effect of different levels of unheated and heated oils on the weight of kidney	140

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SUMMARY

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Rapeseed is called "Salgam" or "Shalgam" in the Arabic languge. It had been grown in India and China for thousands of years, today, rapeseed ranks the fifth crop among the oilseeds of the world.

The rapeseed (B. Campestris and B. napus) was clutivated in Egypt during 1980 as an experimental trial.

This work in this disertation was carried out to through light on the effect of erucic acid in rapeseed oil on nutrition.

Two types of oil, namely, rapeseed and cottonseed oil (fresh and boiled) were used in this investigation. The properties of oils were studied in order to evaluate them. The above two oils were evaluated biologically using experimental weanling male albino rats (30-40 gm). The levels of the oil used were 10 % and 20 % for short and long periods of feeding.

The study revealed the following results:

1. The physical and chemical analysis of fresh rapeseed oil showed that it had a higher specific

gravity, rafractive index, acid value and iodine value. It had a lower saponification value and it has a dark clolour.

2. There was detectable changes in the physical and chemical properties of rapeseed oil often heating for 12 hours. The refractive index, specific gravity, colour, acid value, peroxide value and saponification number increased. While the iodine number decreased.

3. Heating caused an increased in the saturated fatty acid and a decrease in the unsaturated fatty acid of the oil.

4. Biological evaluation of rapeseed oil showed that

i. Rapeseed oil gave the highest body weight, while heated rapeseed oil caused a growth depression.

ii. There was a close correlation between the different lipids content (cholesterol, phospholipid and triglyceride) in serum of rats and the concentration of the ingested oil in diets (level of 10 % of oil in diets lowered the concentration of the lipids in serum of rats).

On the other hand, it was found that using 20 % of oil in diets caused always an increase in cholesterol, phospholipids and triglycerides content in serum of rats. This effect was observed both in fresh and boiled rapeseed oil.

5. Histopathological changes:

There was a measurable changes in the organs (Kidney, liver and heart) of rats fed fresh rapeseed oil.

The kidneys showed shlight swelling of the epithelial and endothelial cells of the glomeruli. They showed vacuolization of the cytoplasm with loss of the brush borders of the living cells.

The livers showed dilatation in the central veins and the cells were swellen, exhibiting granularity, vacuolization of the their cytoplasm and pyknosis of the nuclei of some hepatic cells.

As regards to the hearts, there was a marked separation between the muscle fibers areas of hypertrophy and vacuolization of the myocytes. Some areas were completely destroyed.