

## Evaluation the Level of Dieldrin and Heptachlor in Iraqi People

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### Abstract

Organochlorine pesticides for whatever length of time that been extensively utilized as a part of farming and in public health as highly effective pest control agents.

They are lipophilic and have drawn out a half-existence of years to decades; thus, they amass in human fat tissues and can bring about endless poisonous quality after long term exposure.

To detect and measure the concentrations of organochlorine pesticides, (**Dieldrin and Heptachlor**) in serum and fatty tissue samples and studies their correlation with lipids in order to reveal the need. for human monitoring.

The study was conducted on 50 samples of blood and fatty tissues to determine their lipid concentrations and detect metabolites of organochlorine pesticides and assess their correlations using HPLC.

The study observed that there were raised serum concentrations of lipids which were positively corresponded with lifted serum convergences of Dieldrin and Heptachlor pesticides.

Mean serum concentrations of triglycerides was inside "normal" range while mean serum of aggregate cholesterol was hoisted above ordinary range. Rate of grouping of lipid to serum Dieldrin was higher than that of Heptachlor in living subjects. [DOI: [10.22401/JNUS.20.3.05](https://doi.org/10.22401/JNUS.20.3.05)]

Keywords: Dieldrin, Heptachlor, Pesticides.

### Introduction

Pesticides characterized as any substance or blend of materials proposed for devastating, anticipating, adjusting and opposing to some degree nuisance, or substances managed to creatures for the controlling creepy crawlies, 8-legged creature or different irritations. A pesticide might be a natural operator, disinfectant, antimicrobial, concoction substance or gadget used to battle any irritation<sup>(1)</sup>. Organochlorine pesticides are classes of hydrocarbon mixes described by their cyclic structure, number and area of chlorine molecules and low unpredictability. They were broadly utilized as a part of agribusiness and for irritation control after they were presented in the 1940s<sup>(2)</sup>.

Organochlorine segments have low levels in the earth. They are framed normally. Many of their uses have been invalid or limited since their biological diligence and potential unfriendly embellishments on common environment and social health<sup>(3)</sup>.

Organochlorine compound is a fat-loving and is expected to be a vital compound in the human body and can be found in human adipose tissue, draining the bosom and bloods. Organic chlorine levels, the substances

generally are almost the same in different body tissues after less in the blood<sup>(4)</sup>.

Measurable levels of organochlorine pesticides have begun in human lipid plasma tissue and incubation drain across the world<sup>(5)</sup>.

Chlordane, a human-made substance mixture basically like organochlorines was broadly utilized on, agrarian harvests and as a disinfectant in the United States of America until 1988. Chlordane is made up of > 140 most abundant isomers incorporating chlordane transition, CIS chlordane, trans. nonachlor, betachlordane and heptachlor<sup>(6)</sup>.

In people the prevalent chlordane related contaminants distinguished are trans-nonachlor and oxychlordane. (significant metabolites of the chlordane). Chlordane's have a 10-to 20-year half-life in soil<sup>(7)</sup>.

Chlordane square inhibitory; neurotransmitters and result in focal sensory system poisonous quality and when intense high measurements are taken seizures and loss of motion happen. Chlordane perhaps cancer-causing to people<sup>(8)</sup>.

McGlynn et al. discovered a huge relationship between hazard of testicular germ cell tumors and serum levels of cis-nonachlor, trans-nonachlor, and add up to chlordanes.

A comparative study of the symposium revealed a critical relationship between seminoma and cis-nonaclour levels, trans-nocalore, oxyclordane, and adds up to chlordanes<sup>(9,10)</sup>.

### Materials and Methods

Fifty patients undergoing any surgical operation were included in the study after their written consent. They were undergoing surgical operations in Al-Imamain Al-Kadmain Teaching hospital. 10 ml of Blood and 5g of fatty tissue Samples were collected from each patient and stored in the freezer at 4°C for blood samples and -8°C for fatty tissue samples. Each specimen was sent for a substance investigation at the Department of Chemistry and Biochemistry lab. Montage of Science, University of Al-Nahrain to decide lipid profile and to quantify the level of Organochlorine pesticide paying little respect to their: age and sex.

Blood samples were separated by 3000rpm a fast centrifuge for 15 minutes, and the serum was collected and divided into two equal parts, first one for lipid profile a test and the other one for a checking organochlorine pesticides.

### Organochlorine pesticides.

two hundred µl of serum added to 25µl of salicylic corrosive 25% to serum deproteinization and centrifugation in a rotator for 10 minutes and e at long last took 20µl of arranged specimen and ,infusion of elite; fluid chromatography.

### (HPLC)

#### lipid profile

#### Procedure of measure of cholesterol & Triglyceride in a samples:-

1. One ml was included from y(cholesterol or Triglyceride) in the test tube.
2. Ten µl was included from serum in the same test tube.
3. The blend was shaken for couple of minutes.
4. The tube was placed in the water, way for 51 minutes under, condition 37c.
5. Absorption was, read by a spectrophotometer, at wave length (510nm CHOL) and (505nm TG).

### Extraction of tissue

The extract one gram of fat tissue using n hexane, resolve to dissolve tissue homogenizer homogeneity by adding 1 ml of the same solution to become a 3: 1 and continued homogeneity of the sample to become a solution homogeneity. The solution homogeneity expelled, by centrifugation for 10 min. The sample was centrifuged and separated into two layers, and took the top of the sample is injected for HPLC<sup>(11,12)</sup>.

### Measured concentration in total lipid

The aggregate lipids balanced convergence of the pesticide obtained by partitioning the deliberate pesticides a buildup fixation in the aggregate tissue test by the decimal a small amount of the example that comprised of ether-extractable lipid. The total lipid rating of each example of it adds up to cholesterol and triglyceride levels by using the summation method. The analysis of chlorine organic pesticides has been calculated on a balanced fat hypothesis (ng per gram or parts per billion)<sup>(14)</sup>.

### Results

Fifty patients undergoing any surgical operation were engaged in the study. Females were 28 constituting 57.5% while males were 22 that were 42.5%. The mean age was 36±10.21 years.

Mean serum concentrations of triglycerides was elevated above normal range while mean, serum of the total cholesterol was within normal ranges as in Table (1) (n1e).

**Table (1)**  
*Mean, SD and range of age and lipid parameters.*

Range	Mean	Parameters
20-65	37±11.31	Age (yrs.)
72-358	153.75±41.71	Serum Triglyceride
162.8-268.3	209.89±26.11	Serum Cholesterol.
571.96-857.34	692.49±74.54	Total lipid

The means for Dieldrin in serum and in tissue were higher than that for Heptachlor. There were significant differences between their concentrations in serum and tissue as listed in Table (2) and shown in Fig.(1).

**Table (2)**  
*The difference in serum and tissues in Dieldrin and Heptachlor.*

<i>P</i> value	Tissue mean±SD	Serum mean±SD	Parameters
< 0.001	4.22±0.45	1.73±0.17	<b>Dieldrin</b> (µg/ml)
< 0.001	1.24±0.08	1.03±0.48	<b>Heptachlor</b> (µg/ml)

% of concentration of serum and lipid trans-chlordane was (41.39±8.2) higher than that of oxychlordane 29.53±10.14 as listed in Table (3).

**Table (3)**  
*Percentage of serum to lipid organochlorines.*

Percentage of serum to lipid	Mean±SD	Range
<b>Dieldrin</b>	41.39±8.2	29.48-60.89
<b>Heptachlor</b>	29.53±10.14	8.24-49.14

There were no significant differences between male and female regarding different compounds in the study as shown in table down.

**Table (4)**  
*The difference in parameters between females and males.*

<i>P</i> value	Males (n=23) mean±SD	Females (n=17) mean±SD	Parameters
0.978	36.94±12.23	37.04±10.86	Age (yrs.)
0.695	150.51±50.44	156.14±34.93	Triglyceride (mg/dL )
0.488	206.44±27.97	212.43±24.98	Cholesterol (mg/dL )
0.348	1.61±0.22	1.67±0.16	Serum <b>Dieldrin</b> (µg/ml)
0.847	0.8±0.52	0.77±0.52	Serum <b>Heptachlor</b> (µg/ml)
0.645	4.34±0.44	4.4±0.27	Tissue <b>Dieldrin</b> (µg/ml)
0.549	1.14±0.09	1.12±0.09	Tissue <b>Heptachlor</b> (µg/ml)
0.431	681.43±77.35	700.67±73.03	Total lipid
0.364	41.52±7.47	39.36±7.2	Percentage of conc. of serum to lipid ( <b>Dieldrin</b> )
0.800	28.99±13.07	27.99±10.93	Percentage of conc. of serum to lipid ( <b>Heptachlor</b> )

The co-coefficient was non-significant values as listed Table (5).

**Table (5)**  
*Relationship between age with other parameters in antemortem.*

P	R	Parameters
0.603	-0.085	Tri (mg/dL )
0.296	0.170	Cholesterol (mg/dL )
0.955	0.009	Serum <b>Dieldrin</b> (mg/ml)
0.535	0.101	Serum <b>Heptachlor</b> (mg/ml)
0.272	0.178	Tissue <b>Dieldrin</b> (mg/ml)
0.773	-0.047	Tissue <b>Heptachlor</b> (mg/ml)
0.592	0.087	Total lipid
0.994	0.001	percentage of conc. of serum to lipid ( <b>Dieldrin</b> )
0.410	-0.134	percentage of conc. of serum to lipid ( <b>Heptachlor</b> )

There were significant positive and negative correlation between serum concentrations of Dieldrin and Heptachlor and their serum triglyceride and cholesterol as listed in Table (6).

**Table (6)**  
*Relationship between serum and tissue Dieldrin and Heptachlor in antemortem with serum triglyceride and cholesterol.*

Serum cholesterol		Serum triglyceride		Parameters
R	P	R	P	
0.039	0.810	-0.063	0.699	Serum Dieldrin and (mg/ml)
0.128	0.430	0.126	0.440	Serum Heptachlor (mg/ml)
-0.069	0.673	-0.296	0.063	Tissue Dieldrin (mg/ml)
-0.028	0.863	-0.183	0.258	Tissue Heptachlor (mg/ml)

## Discussion

The point of this review was to measured groupings of organochlorine, in human fat tissue and serum tests. From individual's fat tissue in Iraq and evaluate some purpose behind their occasion and potential prosperity risks in perspective of the results. This is the principal complete investigation of human fat tissue and serum in the Iraq. The review was to confirm the theory that levels of the different lipid segments (add up to cholesterol and triglycerides) are differentially connected with convergences of Dieldr in and Heptachlor Since levels of chlorinated pesticides change in a direct degree to blood lipid levels.

Estimation of cholesterol and triglycerides in the serum from a similar delineation used to play out the testing stipends count of aggregate

lipid levele. The chlorinated pesticides fixations can then be passed on as nanoe-gram per gram ( $\mu\text{g/ml}$ ) lipid<sup>(15)</sup>. Serum and fat greasy tissue tests were additionally acquired from (50) antemortem cases who were not on any lipid-bringing down medicine and were investigated for Dieldrin, Heptachlor, add up to cholesterol and triglyceride focuses. Relationship between toxicant fixations and lipid levels were resolved utilizing different straight relapse investigation. The review watched that hoisted serum centralizations of lipids were decidedly connected with raised serum groupings of Dieldrin and Heptachlor pesticides in examinations balanced for age and sex. The mean serum centralizations of triglycerides (153.75) was inside "customary" accomplishes (triglycerides<200 mg/ml) while

mean serum of the aggregate cholesteroli (209.89) which was lifted above normal range (120–200 mg/ml). Statures in levelst of Dieldrin and Heptachlor were related with lifted levels of serum lipids. Since lifted serum lipids are an indispensable hazard computes for cardiovascular x sicknesses, the past affiliation, a if causal, may effectsly influences human prosperity<sup>(16)</sup>. The most grounded relationship in antemortem cases were seen for Dieldrin contrasted and Heptachlor. There were noteworthy positive and negative relationship between's serum groupings of Dieldrin and Heptachlor and their serum triglyceride and cholesterol. Positive and measurably noteworthy connections were seen between fat tissue and serum centralizations of Dieldrin and Heptachlor however not of the staying industrious natural contaminations, affirming reports that serum or plasma fixations may not give a precise representation of focuses in fat tissue in all circumstances<sup>(17)</sup>. Investigates connections amongst's serum and fat tissue fixations run from negative qualities to coefficients over 0.8<sup>(18)</sup> Information stays constrained on connections amongst serum and fat tissue convergences of determined natural toxins<sup>(19)</sup>. Fixations in the two lattices have diverse natural implications: fat tissue levels have been turned out to be a decent pointer of cumulated long haul introduction, though serum levels are viewed as a measure of current presentation and the activation of persevering natural contaminations from greasy tissues<sup>(20)</sup>.

### Conclusion

- ❖ The review measured hints of organochlorines (Dieldrin and Heptachlor) were perceived in human serum and tissue demonstrating the nearness of human contamination.
- ❖ There is an appositive relationship between's both Dieldrin and Heptachlor with lipid profile (Cholesterol & Triglyceride).
- ❖ The convergences of Dieldrin were higher than Heptachlor in the examples of the review.

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