

# Estimate of Leptin levels and Lipid Profile in children with giardiasis

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## Keywords:

Giardiasis; Leptin; Lipid profile; Cholesterol.

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## ABSTRACT

The aim of this experiment is detect the leptin levels and cholesterol levels and other lipid profile parameters in children with giardiasis. The current experiment was done among children aged 7 years to 13 years in Kirkuk city. The feces and blood samples collected from Children's Hospital between May to end of October 2021. 80 children used in current, who diagnosed with acute watery diarrhea and abdominal pain. The outcomes of this experiment demonstrated significant ( $P<0.05$ ) decreased in levels of leptin in infected children compared with healthy children. Total cholesterol, triglyceride and high density lipoprotein (HDL) exhibited significant ( $P<0.05$ ) decreased in infected children compared with healthy. While, the results of low density lipoprotein (LDL) and very low density lipoprotein (VLDL) in infected children demonstrated significant ( $P<0.05$ ) reduce compared with healthy children. So, the infection with giardiasis leads to decrease leptin levels and cholesterol levels and other lipid profile parameters in children.

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## 1. Introduction

*Giardia lamblia* is main agent of Giardiasis, and one of the most common frequent intestinal parasites of human. *Giardia* species life cycle is define as a simple and included two forms: trophozoite and cyst. *G. lamblia* transports through fecal-oral route by direct or indirect cysts ingestion. The incubation period of *G. lamblia* is 1-2 weeks after cysts ingestion. The symptoms of *G. lamblia* infection are varied from absence of the symptoms to the acute watery diarrhea, vomiting and weight loss [1- 3]. There are different causes for this variability in symptoms; such as the ability and activity of immunity of person during the infection, ingested number of cyst, prior history of infection exposure, the *Giardia* strain and its virulence factors and the age and gender of the host [4], [5]. Giardiasis might to causes a various gastrointestinal problems as irritable bowel syndrome, the inflammatory bowel disease, urticaria in approximately 5% of infected patients and dysfunction of biliary tract [6- 8]. Otherwise, the chronic infection is related with cognitive dysfunction with the malnutrition and the deficiencies and lake in micronutrients inclusive vitamins especially vitamin A and minerals [9- 11]. So, the aim of this experiment is detect the leptin levels and cholesterol levels and other lipid profile parameters in children with giardiasis.

## 2. Materials & methods

## 2.1 Samples

The current experiment was done among children aged 7 years to 13 years in Kirkuk city. The feces and blood samples collected from Children's Hospital between May to end of October 2021. 80 children used in current, who diagnosed with acute watery diarrhea and abdominal pain.

## 2.2 Feces examination

The feces specimens were examined by using light microscope and the microscopic diagnosis was followed by method of concentration of formol-ethyl acetate [12].

## 2.3 Measurements

### 2.3.1 Leptin

The determination of serum leptin in both infected and healthy children was done by using ELISA system, Creative diagnostic (U.S.A).

## 2.4 Lipid profile

The total cholesterol and triglyceride (TG) levels were estimate enzymatically by device known as spectro photometric. The level of total cholesterol was estimate by CHOD-POD Enzymatic method. The level of triglyceride (TG) was estimate by GPO-PAP enzymatic method. HDL level was estimate by colorimetric method. The levels of LDL and VLDL were calculated based on formula of Friedewald [13], [14].

## 2.5 Statistical analysis

The data of this experiment were presented as mean  $\pm$  Standard error.  $P < 0.05$  was considered statistically significant using ANOVA. The analysis of data was done by using Minitab software version 17.

## 3. Results

### 3.1 Leptin

The outcomes of this experiment demonstrated significant ( $P < 0.05$ ) decreased in levels of leptin in infected children ( $1.18 \pm 0.25$  ng/ml) compared with healthy children ( $2.83 \pm 0.52$  ng/ml) as shown in figure (1).

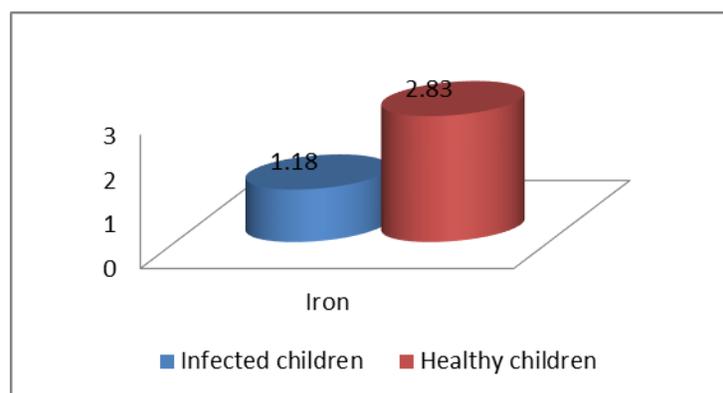
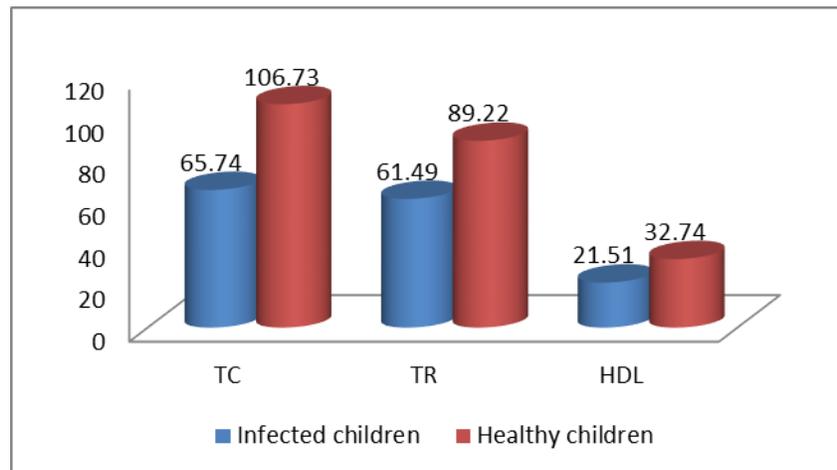


Figure (1): levels of leptin in experiment groups

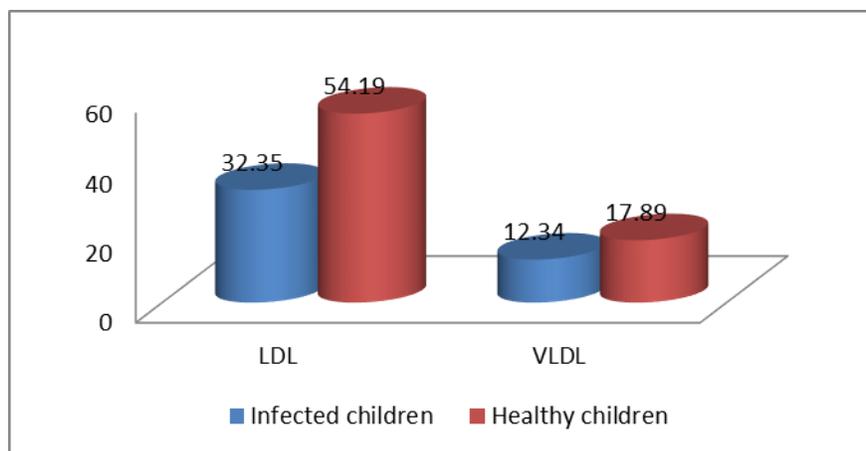
### 3.2 Lipid profile

Total cholesterol ( $65.74 \pm 6.03$  mg/dl), triglyceride ( $61.49 \pm 4.28$  mg/dl) and HDL ( $21.51 \pm 2.74$  mg/dl) exhibited significant ( $P < 0.05$ ) decreased in infected children compared with healthy children ( $106.73 \pm 12.85$ ;  $89.22 \pm 5.17$ ;  $32.74 \pm 3.01$  mg/dl, respectively) as shown in figure (2). While, the results of LDL and VLDL in infected children ( $32.35 \pm 4.41$ ;  $12.34 \pm 1.26$  mg/dl, respectively) demonstrated significant

( $P < 0.05$ ) reduce compared with healthy children ( $54.19 \pm 8.73$ ;  $17.89 \pm 1.13$  respectively) as shown in figure (3).



**Figure (2):** levels of total cholesterol (TC), triglyceride (TR) and HDL in experiment groups



**Figure (3):** levels of LDL and VLDL in experiment groups

#### 4. Discussion

Among the most common parasites that cause health complications of humans, *G. lamblia* is classified as the most ones. The recent studies demonstrated that about half million patients are recorded as new cases [15]. Several studies and researches on the infections of children with parasite concentrated on nutritional condition and the growth status. Protozoa infections effect on the nutrition status, growth and organs functions of host is remain poorly understood. The findings of these studies and researches are contradictory about the impacts of infections on the growth status of children. Some studies referred that these parasite infections are associated to growth retardation while other studies referred that no correlation [16- 19]. The current findings show decreased the levels of leptin in infected children and this result is in agree with [20] who referred that the leptin concentrations in infected children was low. Otherwise, Total cholesterol, triglyceride and HDL exhibited significant ( $P < 0.05$ ) decreased in infected children compared with healthy children in this study. This study is agree with [21] who reveals a significant decreased in serum cholesterol of Giardiasis patients, also this finding corresponding to the outcomes of study carried

out by [22]. *G. lamblia* infection affects lipid parameters, which lead to malabsorption of lipid, and causes a low cholesterol levels in blood patients [23].

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