

## The Vital Role of Black seeds (*Nigella sativa*) in Antagonize The side Effect of Green Lean Body Capsule on Liver Function in Female Rabbits

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### -----ABSTRACT-----

*This investigation was designed to determine the side effects of weight reduction fruits (green lean body capsule) administration for 30 days on some liver function parameters and antagonize or decrease these effects by black seeds. Fifteen mature female rabbits randomly divided into three groups ( 5 /group) drenched for 30 day: control group received physiological normal saline (1ml/kg B.W); first treated group T1 received green lean body capsule (4.2mg/kg B.W) ; second treated group T2 received green lean body capsule (4.2mg/kg B.W) and black seeds (28mg/kg B.W). Blood samples were collected via heart puncture pre treatment and day 30 of administration, the plasma liver function parameters reveled that green lean body capsule caused a significant increase in plasma total bilirubin, triglycerides, GOT and GPT enzymes, on the other hand decrease total cholesterol and glucose with un significant increase in total protein of T1 as compare to pretreatment, T2 and control while the T2 represented un significant changes in the above mentioned parameters as compare to pretreatment and control. In conclusions, the black seeds act as a defense factor against the destructive effect of green lean body capsule on the biochemical activity of hepatocyte.*

**Key words:** *Nigella sativa, black seeds, rabbits, liver and green lean body capsule*

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### I. INTRODUCTION

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems(1). Many plant and herbs are known to be weight reduction, among these koncing This sometimes results in toxication, when the metabolite is more toxic than its precursor. Preferably, the toxins are conjugated to avail excretion in bile or urine(2)People in different cultures and places have used particular plants for to treat certain medical problems. A larger number of these plants and their extract have shown beneficial therapeutic effects, including anti-oxidant, antiinflammatory, anti-cancer, anti-microbial, and immunomodulatory effect(3). Among the promising medicinal plants, *Nigella sativa*, The seeds of *Nigella sativa* are the source of the active ingredients of this plant thymoquinone, dithymoquinone, thymohydroquinone and thymol(4) . It is the black seed referred to by the prophet 2 Mohammed as having healing powers(5) The seeds of *Nigella sativa*, known as black seed, black cumin have long been used in the middle and far east as a traditional medicine for a wide range of illnesses including bronchial asthma, headache, dysentery, infections, obesity, back pain, hypertension and gastrointestinal problems(6).. *N.sativa* seeds contain other ingredients, including nutritional components such as carbohydrates, fats, vitamins, mineral elements, and proteins, including eight of the nine essential amino acids(7). Monosaccharides in the form of glucose, rhamnose, xylose, and arabinose are also found. *Nigella sativa* seeds are rich in the unsaturated (linoleic and oleic acid )and essential fatty acids.(7). The major phospholipid classes are phosphatidylcholine, phosphatidylethanolamine, phosphatidyl-serine, and phosphatidylinisol(4,7) . The seeds contain carotene, calcium, iron, and potassium(7). The liver converts ammonia to urea(8)However, the effect of weight body reduction capsule on liver function remain in a form of few unproved speculation. Therefore, this effort was made to throw light on first: the effect weight body reduction capsule administration for 30 days on Some liver function parameters and second to monitor the protective effect of black seeds provided to liver tissues against oxidative stress of green lean body capsule : Liver excretion (plasma total bilirubin), Liver metabolic (biochemical) parameters: plasma total protein, triglycerides,glucose,cholesterol Liver enzyme: glutamic oxaloacetate transaminase GOT, glutamic pyruvic transaminase GPT.

## II. MATERIALS & METHODS

Animals: A total number of 15 local mature female rabbits were used in this investigation, the animals left 2wk for adaptation, the weight recorded in the beginning of experiment to determine the dose of green lean body capsule and black seeds, 3 their weight range from 1250-1500gm and their age range from 9-12month. They were fed ordinary pellet diet and green way. The animals were kept in individually wire meshed stainless steel cages (65,45,55cm) at temperature between 23-28°C at college of veterinary medicine animal house. The light and dark cycle (12:12). The animals had free access to food and water, care was taken to avoid unnecessary stress and noise cage crowding.

Experiment design: 15 rabbits were divided into three groups (5 for each):

Control group: Give normal saline 1ml/kg orally daily for 30 days. First treated group T1: Give green lean body capsule in dose 4.2mg/kg orally daily for 30 days.

Second treated group T2: received green lean body capsule 1ml/kg in dose 4.2mg/kg orally daily for 30 days + black seeds in dose 28mg/kg orally daily for 30 days. Blood sample 5ml were obtained via cardiac puncture from each group by using disposable syringes washed with heparin; plasma isolated by centrifuge for 15 min in 3000 cycle/min. Samples were stored in (-20) each supernatant plasma was used for some biochemical parameter such as plasma total bilirubin, plasma total protein, plasma total cholesterol, triglycerides, glucose, GOT and GPT. All these parameter estimation was carried out before treatment and at 30 day of treatment for each group by colorimetric methods.

Plant materials: seeds of *Nigella sativa* were purchased from local market in Baghdad. The seeds were grinded with a grinder into powder and dissolved in normal saline (freshly prepared) to a final concentration. The aqueous extract of *Nigella sativa* is administered orally to rabbits using animal feeding intubation needle. Statistical analysis of all data was performed on the basis of two way analysis (ANOVA), depending on the experimental design at each time, specific group differences were determined using least significant differences (LSD) test (9).

## III. RESULTS & DISCUSSIONS

Liver function: Divided into: Liver excretion (plasma total bilirubin concentration): the result showed that green lean body capsule caused a significant increase ( $p < 0.05$ ) in level of plasma total bilirubin at 30 days of T1 as compared to pretreatment, control and T2. Bilirubin is the chief bile pigment found in the blood of domestic animals and derived from hemoglobin, high level of plasma bilirubin are indication of hemolytic condition and hepato cellular disease and obstruction of bile duct system outside the liver (10). This result may be attributed that capsule caused these effect on liver, while the un significant increase of bilirubin in T2 this may be due to that black seed decrease anemic effect of green lean body capsule (11).

Metabolic function (biochemical tests): Values of plasma triglycerides and total cholesterol shown a significant increase and decrease ( $p < 0.05$ ) respectively at 30 days of T1 rabbits as compared to pretreatment, control and T2 group, the liver is involved in many phases of lipid metabolism including synthesis, esterification and excretion of cholesterol (8), so the low level of total cholesterol may be due to that green lean body capsule either decrease its absorption from intestine or decrease synthesis, esterification and increase excretion by liver, while the increase in plasma triglycerides may be due to lipolysis of adipose tissue throughout the body (12). The data pertaining decrease in plasma glucose concentration of T1 as compare to pretreatment, control and T2. This result may be due to that green lean body capsule decrease appetite and as a result the increase utilization of glucose by the cells throughout the body as energy (13). The results in table explain that green lean body capsule lead to a un significant increase in plasma total protein in T1 as compare to pretreatment, control and T2, since the plasma protein occupy a central and dominal position in metabolism of protein because of their intimate relation to metabolism in the liver as well as their interaction with other tissues throughout the body, the slight increase of plasma total protein may be due to that green lean body capsule lead to mild muscle necrosis (14).

Transaminase enzymes: In particular, there was a significantly increased ( $p < 0.05$ ) in plasma GOT and GPT enzyme concentration in T1 rabbits as compared to pretreatment, control and T2. Alteration in plasma enzyme activity due to malfunction of liver as a result of either disruption of hepatic as a consequence of altered membrane permeability including GOT and GPT or due to lack of biliary excretion as seen in obstruction (15). Plasma glutamic oxaloacetate transaminase (GOT): this enzyme associated with cell necrosis of many different tissue in the body. Pathosis involving either skeletal muscle or cardiac muscle and hepatic cell which lead to escape large quantity of this enzyme into blood (16).

Plasma glutamic pyruvic transaminase (GPT): or called alanine aminotransferase This enzyme is of value in detect in the extensive of liver disease as this enzyme is present in large quantity in the liver, so this result may be due to that green lean body capsule lead to extensive liver disease (17,18).

In conclusion, the black seeds approximately return liver function to its normal state and provide protection to the cells membrane against oxidative stress of green lean body capsule probably due to other antioxidant component in addition to its more potent component thymoquinone which may potentiate glucose 6phosphate dehydrogenase (enzyme rate limiting enzyme of pentose phosphate pathway) and finally convert in active intracellular antioxidant glutathione to active form (19).

**The vital roles of black seeds in antagonize the side effect of green lean body capsule on liver function in female rabbits.**

Biochemical Parameters		Control group (5animals)	1 <sup>st</sup> Treated group T1 (5animals)	2 <sup>nd</sup> Treated group T2 (5animals)
Plasma total bilirubin	Pretreatment	1.0±0.41a	1.2±0.10a	1.1±0.19a
	Post treatment	1.1±0.35aA	2.9±0.11bB	1.5±0.20Aa
Plasma total protein	Pretreatment	5.1±0.21a	5.0±0.15a	5.1±0.20a
	Post treatment	5.2±0.22aA	5.3±0.19aA	5.2±0.18Aa
Plasma total cholesterol	Pretreatment	18.9±0.92a	18.0±0.42a	18.1±0.33a
	Post treatment	19.1±0.81aA	13.8±0.38bB	16.7±0.45aA
Plasma triglycerides	Pretreatment	84.0±0.22a	84.5±0.42a	84.3±0.77a
	Post treatment	83.8±0.30aA	143.2±0.36bB	89.9±0.51aA
Plasma glucose	Pretreatment	115.5±0.25a	114.9±0.89a	115.2±0.78a
	Post treatment	115.9±0.15aA	93.4±0.93bB	110.2±0.69aA
Plasma GOT enzyme	Pretreatment	20.4±0.43a	20.1±0.49a	19.9±0.40a
	Post treatment	20.9±0.51Aa	27.8±0.66bB	23.4±0.58aA
Plasma GPT enzyme	Pretreatment	21.9±0.52a	22.2±0.49a	21.8±0.41a
	Post treatment	22.3±0.58Aa	26.6±0.71bB	23.1±0.52Aa

\*Capital letters denote significant differences p<0.05 between groups.

Small letters denote significant differences p<0.05 within groups.

Bilirubin LSD=1.1; total protein LSD=0.5; cholesterol LSD=3.1; glucose LSD=8.3; GOT-LSD=6.7; GPT-LSD=3.1

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