# Effective therapeutic effects of Cuminum cyminum on biological changes in alloxan-induced diabetic rats

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Abstract:
For ages, all societies have used herbs. Each region of the world uses herbs unique to that region. An example of these herbs is *Cuminum cyminum* One of the best therapeutic herbs, (cumin), has demonstrated a several of benefits thanks to the presence of nutrients. For energy, immune systems, lactation, and skin problems, iron is a crucial component. Cumin has a variety of pharmacological properties as well, thus this study seeks to determine how well it can be used as a medicine. *Cuminum cyminum* on the biochemical alterations in the rats' alloxan-induced diabetes. Five groups of animals, each weighing 170 grammes and being ten weeks old, participated in the experiment. Four of the groups received alloxan to cause diabetes, while one acted as the negative control group (normal). One member of the diabetes group is a positive control who is fed a conventional diet, while the other three are fed 2%, 3%, and 5%. *Cuminum cyminum* for a month. The experiment was completed with the removal of the organs and the collection of blood samples for biochemical analysis. The outcomes demonstrated that group 5 (relative to the control (-) group) diabetic rats fed on 5% Cuminum cyminum) had the best serum glucose (mg/dl) values. Additionally, groups 3 and 5 (diabetic rats fed 2% and 5% Cuminum cyminum) reported the best serum AST (U/L) results as compared to the control (-) group. The results suggested to use various amounts of cumin powder, particularly that of 5% is useful to diabetic patient and various doses of cumin powder may be recommended to improve liver and kidney function.

**KEYWORDS** :- *Cuminum cyminum* – serum glucose – liver function

**Introduction**

a formal name for Cuminum cyminum L. (Cumin) also known as Cuminia cyminum J.F. and Cuminum odorum Salisb A popular spice, Cuminum cyminum is a bio-nutrient supplement that improves the taste, flavour, and scent of food as well as treating a number of maladies. Other members of the Apiaceae family include Cuminum hispanicum Bunge, Ligusticum cuminum (L.) Crantz, and Cuminum cyminum. One of the most common spices used in cooking is cumin (Cuminum cyminum), which has a unique aromatic impact. Since the Middle ages, cumin has been a traditional and widely used spice because it was a symbol of devotion and love **Hanif *et al.*, (2012).** The distinctive qualities of each variety of cumin—including anise, fennel, and black cumin—are what set them apart from one another. A thorough investigation revealed that cumin seeds contain fixed oil, volatile oil, acids, essential oil, protein, and other compounds. According to **Hajlaoui *et al*. (2010),** significant cumin constituents such pinene, cymene, terpinene, cuminaldehyde, oleoresin, and thymol have demonstrated advantages in the treatment of a variety of illnesses. Iron is a vital component for energy, immune systems, lactation, and skin issues. Numerous pharmacological effects of cumin exist. Therefore, volatile plants usually contain a complex mixture of less-molecular-weight lipophilic compounds that are created through several biosynthetic pathways and that also support a variety of physiological functions. Of the family of fragrant plants with hollow stems, Well-known members include anise, asafoetida, caraway, carrot, celery, coriander, cumin, dill, fennel, parsley, parsnip, and sea. Cumin was a key ingredient in the curry and chilli powder used to flavour a number of industrial food products in traditional medicine. The use of herbal remedies and other natural products to treat or prevent sickness is known to children between the ages of 1 and 5. Due to their availability, security, and usefulness, Additionally, neither -pinene nor -pinene were discovered in the roots, while -phellandrene was notably the only terpenoid component found in the leaves and -pinene was most abundant in the flowers. Adiponectin, highsensitivity C-reactive protein (hsCRP), and TNF-1 are only a few of the inflammatory biomarkers that are significantly affected by C. cyminum-supplemented therapies. Additionally,. **Mohamed *et al* .,(2018)**.

Hyperglycemia caused by abnormalities in insulin secretion, action, or both characterises the group of metabolic illnesses known as diabetes. There have been numerous reports of the use of metals, minerals, and herbal remedies to cure type 2 diabetes . Ayurveda is an ancient school of Indian medicine that emphasises the use of plants and products derived from plants. The ingredients used in this traditional medication come from plants and are used to treat ailments. Many people believe that plant products are less harmful and have fewer adverse effects than manufactured ones. **Satmbekova *et al.*,(2018)**.

**2- AIM OF STUDY:-**

This work the aimed to know the effective therapeutic effects of *Cuminum cyminum* on biological changes in diabetic rats

**3- MATERIALS AND METHODS:-**

**3.1- Materials:**

**A- Source of *Cuminum cyminum* :** *Cuminum cyminum* **wsa**obtained from local market, Al-Baha City, KSA as dried material.

**B-Experimental animals:** For the investigation, thirty male albino Sprague Dawley rats weighing 150–10g were employed.

**C- Alloxan** : it was bought pure quality chemicals from Sigma in Cairo, Egypt.

**D- Casein, cellulose, choline chloride, and DL Methionine:** The Morgan Co. in Cairo, Egypt provided the casein, cellulose, choline chloride powder, and DL methionine powder.

**E-Chemical kits used in this study** The following blood tests—(TC, TG, HDL-c, ALT, AST, ALP, bilirubin, urea, creatinin, and albumin) kits were obtained from the Cairo, Egypt-based Al-Gomhoria Company for Chemical, Medical, and Instruments.

**3.2 - Methods:**

**3.2.1 . Diets:**

**3.2.1.1.Basal diet**: 10% protein, 10% corn oil, 10% choline chloride, 5% cellulose, 1% vitamin mixture, and 4% salt mixture make up the bulk of the diet, and up to 100% corn starch. according to (ayasekhar *et al.*, 1997)

**3.2.١.2. Induced Disease for rats;** alloxan 150 mg/kg body weight was intraperitoneally injected into normal, healthy male albino rats (1985). Fasting blood samples were taken using the retro-orbital technique six hours after the administration of alloxan to measure

fasting serum glucose. Diabetic rats were those with fasting serum glucose levels greater than 185 mg/dl.( ***N.D.D.G. (1994)***.

**3.2.1.3. Experimental design:-** In this experiment, 30 mature male white albino Sprague Dawley strain rats weighed (14010g), were 10 weeks old, and were white in colour. All rats received the same basic food. AIN., (1993) for 7 days in a row. Following this period of adaption, rats are separated into 5 groups, each of which has 6 rats: Six rats from

Group 1 received a standard diet (control negative).

Group 2: six rats with diabetes fed a standard diet (control positive).

Group 3 consists of six diabetic rats on a standard diet. Cuminum cyminum plus 2% Six diabetic rats fed on a basal diet make up group #4. Cuminum cyminum plus 3% Six diabetic rats fed a basic diet plus 5% cuminum cyminum comprised Group 5 The body weight and feed intake of the rats were calculated weekly during the experimental period, and their general behaviour was assessed. The experiment will last for 28 days, after which, each rat will be individually weighed before being killed and having blood samples taken. Blood samples were maintained in a deep freezer until use after being centrifuged at 4000 rpm for ten minutes to separate the blood serum. Following the removal of the liver, spleen, kidney, and heart, the following histological tests were carried out.

**3.3.Biological evaluation:**

By measuring body weight growth percentage (BWG) and food efficiency ratio (FIR) in accordance with Chapman *et al.* (1959), the biological effectiveness of the various diets was evaluated:

$$BWG = \frac{\text{Final weight} - \text{initial weight}}{\text{Initial weight}}$$

$$FER = \frac{\text{Gain in body weight (g)}}{\text{Feed intake (g)}}$$

**3.3.1.Organs weight:** Rat liver, kidney, heart, and other organs were delicately dissected, cleaned in saline solution, dried between two filter sheets, and then immediately preserved in buffered formalin solution (10%) for histological analysis.

**3.3.2.Blood sampling**: Blood was drawn following a 12-hour fast, initially from the retroorbital vein and then, at the end of each session, from the hepatic portal vein. Blood samples were drawn and placed in dry, clean centrifuge tubes. The tubes were then

placed in a water bath (37°C) for 28 minutes to allow the blood to coagulate. The serum was then meticulously extracted, placed in clean Eppendorf tubes, and maintained frozen at -20°C until analysis was performed in accordance with the procedure described by **(Schermer,1967).**

**3.4 .Biochemical Analysis:**

**3.4.1. Liver functions:**

**3.4.1.1. Determination of Alanine transferase (ALT):**Determination of (ALT) was carried out according to the method of ***Tietz (1976).***ALT catalyzes the transfer of the amino group from L-alanine to a-Ketoglutarate resulting in the formation of pyruvate and L-Glutamate.

**3.4.1.2.Determination aminotransferase (AST)** Determination of serum AST was carried out according to the method of **(Hafkenscheid (,1979).**

**3.4.1.3.Serum albumin (SAlb):**Serum albumin was determined according to the method described by **(Doumas et al.,( 1971).**

**3.4.2. Kidney functions:**

**3.4.1.1 Determination of serum urea:** Urea was determined by enzymatic method according to (Patton and Crouch ,(1977).

**3.4.2.2. Determination of serum creatinine:** Serum creatinine was determined according to the method described by (Henry ,1974).

**3.4.3. Determination of blood glucose:** The method of (Tinder, 1969) was used for the calorimetric enzyme measurement of serum glucose.

**3.4.5 Statistical analysis:**

Statistical analysis were calculated using one way classification. Analysis of variance (ANOVA),and least significant difference (LSD) according to **(Snedcor and Cochran 1967).**

**4- RESULTS AND DISCUSSION**

This work aimed to know the effective therapeutic effects of *Cuminum cyminum* on biological changes in diabetic rats

**4.1. Biological results**

Table 1 shows the effects of cuminum cyminum powder on the body weight gain (BWG), feed intake (FI), and feed efficiency ratio in obese rats (FER).

Table (1) show the mean value of body weight gain % of diabetic rats fed on **Cuminum cyminum.** It was apparent that the mean BWG% for the control (+) group was lower than for the control (-),

coming in at 3.11 0.115 and 14.43 0.153, respectively, a statistically significant difference being shown. The difference in percentage improvements between the control (-) and control (+) groups was 364%. Every diabetic rat consumed (2%, 3%, and 5%).

**Cuminum cyminum)** exhibited considerable variations in mean values from the control (+) group. The figures were, respectively, 3.35 0.05, 4.62 0.072, and 12.25 0.229 %. The percentages of decline for groups 3, 4, and 5 were 7.7, 48.6, and 293.9, respectively. The group 5 (diabetic rats fed on 5%) BWG% was the best.

**Cuminum cyminum)** compared to the control group (-) group. These findings support those of (Murray *et al.*,( 2000). The current investigation revealed that, in comparison to the control group (28.65g), common cumin considerably enhanced the body weight gain (28.56, 31.88)g, which was directly proportional to the increase in the supplied dosage.

Table (1) show the mean value of feed intake (FI) of diabetic rats fed on *Cuminum cyminum* . With mean feed intakes of 8.96 0.16 and 25.81 0.51, respectively, for the control (+) and control (-),It was clear that there was a statistically significant difference between the two groups. Every diabetic rat ingested (2%, 3%, and 5%) of the control (+) and control (-) groups, resulting in an increase difference of 188.1%.

**Cuminum cyminum)** exhibited considerable variations in mean values from the control (+) group. 10.33 0.11, 11.28 0.27, and 11.29 0.25, respectively, were the figures. For groups 3, 4, and 5, the percentage increases were l5.28, 25.89, and 26, respectively. The groups 5 (diabetic rats fed on (5% of)) groups had the best feed intake (FI) data.

*Cuminum cyminum)*)compared to the control group (-) group.These findings support those of Joshi et al (2000) The findings showed that the dietary intervention had no appreciable impact (P 0.05) on feed intake. The birds fed 1% cumin during the second and third weeks had the highest feed intake. The increase in feed consumption shown in this study may have resulted from cumin's flavouring effects.

Table (1) show the mean value of feed efficiency ratio (FER) of diabetic rats fed on *Cuminum cyminum*. It was noticeable that the control (+) group's mean feed efficiency ratio was lower than the

control (-) group's, coming in at 1.02 0.02 and 1.92 0.07, respectively, suggesting a statistically significant difference. When comparing the control (-) group to the control (+) group, the rise percentage was 88.24%. When compared to the control (+) group, all diabetic rats fed with (2%, 3%, and 5% Cuminum cyminum displayed significantly different mean values. The figures were, correspondingly, 1.22 0.02; 1.33 0.03; and 1.14 0.05. The percent of increase were l9.61, 30.39, and 11.76, for groups . The best feed efficiency ratio (FER) was recorded for groups 5 (diabetic rats fed on ( 5% *Cuminum cyminum)*) compared to the control group (-) group. The outcomes here concur with those of Stanley et al (2010) The findings demonstrated that cumin had a substantial impact on feed FER in the sixth week after being determined to have no effect during the first five weeks of age (P 0.05).

**Table (1): Effect of various Cuminum cyminum concentrations on the BWG, FI, and feed efficiency ratio (FER) of diabetic rats.**

| Parameter / Groups | MWG% | | | FI | | | F.E.R | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean±SD | % change | L.S.D | Mean±SD | % change | L.S.D | Mean±SD | % change | L.S.D |
| G1: control (-) | $14.43^{a}$±0.153 | 364 | 0.23 | $25.81^{a}$±51 | 188.1 | 0.45 | $1.92^{a}$±0.07 | 88.24 | 0.06 |
| G2: control (+) | $3.11^{b}$±0.115 | 48.6 | | $8.96^{b}$±0.16 | | | $1.02^{b}$±0.02 | | |
| *G3: 2% Cuminum cyminum* | $3.35^{c}$±0.05 | 7.7 | | $10.33^{c}$±0.11 | | | $1.22^{b}$±0.02 | 19.61 | |
| *G3: 3% Cuminum cyminum* | $4.62^{d}$±0.072 | | | $11.28^{cd}$±0.27 | | | $1.33^{c}$±0.03 | 30.39 | |
| *G5: 5% Cuminum cyminum* | $12.25^{e}$±0.229 | 293.9 | | $11.29^{cd}$±0.25 | | 0.51 | $1.14^{b}$±0.05 | 11.76 | |

BWG=Body weight gain, FI=Feed intake, FER =Feed efficiency ratio. Values are expressed in mean ± SD. Mean value with different letters in the same column are significantly different (P<0.05).

**Effect of different concentrations of *Cuminum cyminum* serum glucose (mg/dl) of diabetic rats**

Table (2) show the mean value of serum glucose( mg/dl) fed on *Cuminum cyminum* . It was clear that the control (+) group's mean

serum glucose mg/dl value was much greater than the control (-) group's, coming in at 225.5 +/- 0.5 and 115.7 +/- 0.2, respectively. The percentage of declines was -48.7% when comparing the control (-) group to the control (+) group. In comparison to the control (+) group, all groups fed on varying percentages of (2%, 3%, and 5% Cuminum cyminum) all displayed substantial declines. The results were correspondingly 193.3 0.25, 156.85 0.47, and 148.79 0.22. For groups 3, 4, and 5, the percentage declines were 14.3, 30.4, and 34, respectively. In comparison to the control (-) group, group 5 (diabetic rats fed on 5% Cuminum cyminum) had the best blood glucose (mg/dl) results. This outcome is consistent with Mohsen et al (2017). Metformin, an oral antidiabetic medication used to treat type II diabetes, has been demonstrated to be ineffective in comparison to cuminum cyminum, which works by enhancing the action of insulin and decreasing the synthesis of liver glucose.

**Table (2): Effect of different concentrations of *Cuminum cyminum* serum glucose (mg/dl) of diabetic rats:**

| Parameter / Groups | AST (U/L) | | |
|---|---|---|---|
| | Mean±SD | %change | L.S.D |
| G1: control (-) | $115.7^{a}$± 0.2 | -48.7 | 0.57 |
| G2: control (+) | $225.5^{b}$ ± 0.5 | | |
| *G3: 2% Cuminum cyminum* | $193.3^{c}$± 0.25 | -14.3 | |
| *G3: 3% Cuminum cyminum* | $156.85^{d}$± 0.47 | -30.4 | |
| *G5: 5% Cuminum cyminum* | $148.79^{e}$± 0.22 | -34 | |

Values are expressed in mean ± SD. Mean value with different letters in the same column are significantly different (P<0.05).

**Effect of Cuminum cyminum on liver function (ALT , AST and ALP) of diabetic rats:**

Table (3) show the mean value of serum AST (U/L) diabetic rats fed on *Cuminum* cyminum. It was clear that the control (+) group's mean serum AST (U/L) value was much greater than the control (-) group's, coming in at 139 + 1 and 95.70 + 0.20, respectively. Comparing the control (-) group to the control (+) group, the percent of declines was -31.2%. In comparison to the control (+) group, all groups fed on varying percentages of (2%, 3%, and 5% Cuminum cyminum) all displayed substantial declines.The values were 133.79 ± 0.22, 111.02 ± 0.29, and 107.3 ± 0.3, respectively. The percent of decreases were -3.7, -20.1, -22.8for groups 3,4, and 5, respectively.

The best serum AST (U/L) was recorded for groups 5 (diabetic rats fed on (5% Cuminum cyminum) when compared to control (-) group .This result agree with **Arun Kumar *et al*,(2017).**In the current investigation, profenofos-induced intoxication was studied using serum transaminases as an indicator of hepatocellular injury. The degree of hepatic necrosis is often reflected by the serum transaminase level. The levels of SGPT and SGOT were raised by the profenofos-induced toxicity.The reduced activity of serum transaminases is proof that the dosage of cumin and coriander successfully prevents liver damage. Thus, the use of cumin and coriander returns the SGPT and SGOT levels to normal.

Table (3) show the mean value of serum ALT (U/L) diabetic rats fed on Cuminum cyminum. It was clear that the control (+) group's mean serum ALT (U/L) value was significantly greater than the control (-) group's, coming in at 59.25 0.23 and 30.70 0.21, respectively. The difference in percentage declines between the control (-) group and the control (+) group was -48.2%. In comparison to the control (+) group, all groups fed on varying percentages of (2%, 3%, and 5% Cuminum cyminum) all displayed substantial declines. The figures were, respectively, 51.3 0.2, 48.03 0.45, and 47.29e 0.22. For groups 3, 4, and 5, the percentage declines were -18.9, -20.2, -21.9, -35.8, and -39.7, respectively. In comparison to the control (-) group, group 5 (diabetic rats fed on 5% Cuminum cyminum) had the best serum ALT (U/L) results. This outcome supports Draper and Hadley's findings (1990). Between Group II and the control group, Plasma ALT levels did not differ statistically significantly (P = 0.016). Groups III (20 g/L M. spicata) and IV (40 g/L M. spicata) were compared to the control group. showed significantly higher plasma AST and ALT values (P 0.016 and P 0.0016, respectively).

Table (3) show the mean value of serum ALP (U/L) diabetic rats fed on *Cuminum cyminum*. It was noticeable that the control (+) group's mean serum ALP (U/L) value was significantly greater than the control (-) group's, at 500.77 0.68 and 154.17 0.76, respectively. When comparing the control (-) group to the control (+) group, the percentage of declines was -69.2%. In comparison to the control (+) group, all groups fed on varying percentages of (2%, 3%, and 5% Cuminum cyminum) showed substantial declines.The values were 425.5 ± 0.5, 342.53 ± 0.47, and 319.5 ± 0.5 respectively. The

percent of decrease were -15, -31.6, and -36.2, for groups 3,4,and 5 respectively. The best serum ALP (U/L) was recorded for groups 5 (diabetic rats fed on (5% *Cuminum cyminum*) when compared to control (-) group. This result agree with **Draper and Hadley, (1990)** There were no statistically significant changes in plasma ALP levels between Group II and the control group (P = 0.016). In comparison to the control group, Group III (20 g/L M. spicata) and Group IV (40 g/L M. spicata) demonstrated significantly higher plasma ALP levels. respectively (PB/0.016 and PB/0.0016).

**Table (3) Effect of *Cuminum cyminum* on liver function (ALT , AST and ALP) of diabetic rats.**

| Parameter / Groups | AST (U/L) | | | ALT (U/L) | | | ALP (U/L) | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Mean±SD** | **% change** | **L.S.D** | **Mean±SD** | **% change** | **L.S.D** | **Mean±SD** | **% change** | **L.S.D** |
| G1: control (-) | $95.70^{a}$±0.20 | -3.12 | 0.74 | $30.70^{a}$±0.21 | -48.2 | 0.51 | $154.17^{a}$±0.7 | -69 | 0.91 |
| G2: control (+) | $139^{b}$±1 | | | $59.25^{b}$±0.23 | | | $500.7^{b}$±0.6 | | |
| *G3: 2% Cuminum cyminum* | $133.79^{c}$±0.22 | -3.7 | | $51.3^{c}$±0.2 | -13.4 | | $425.2^{c}$ ±0.5 | -15 | |
| *G3: 3% Cuminum cyminum* | $111.02^{d}$±0.29 | -201 | | $48.03^{d}$±0.45 | -18.9 | | $342.53^{d}$±0.04 | -31 | |
| *G5: 5% Cuminum cyminum* | $107.3^{e}$±0.3 | -22.8 | | $47.29^{e}$±0.22 | -20.2 | | $319.5^{e}$±0.5 | -36 | |

Data is presented as mean SD.The mean value for the same column with various letters is significantly different (P 0.05).

**Effect of different concentrations of *Cuminum cyminum* on kidney functions of diabetic rats:**

Table (4) show the mean value of serum urea (mg/dl) diabetic rats fed on Cuminum cyminum. It was clear that the control (+) group's mean serum urea (mg/dl) value was significantly greater than the control (-) group's, coming in at 38.8 + 0.03 and 13.2 + 0.11, respectively. Comparing the control (-) group to the control (+) group, the percentage of declines was -66%. In comparison to the control (+) group, all groups fed on varying percentages of (2%, 3%, and 5% Cuminum cyminum) showed substantial declines.

The values were 34.38 ± 0.17, 30.09 ± 0.09, and 27.03 ± 0.18,respectively. The percent of decreases were -15, -31.6,and -36.2, respectively. The best serum urea (mg/dl) was recorded for groups 5 (diabetic rats fed on (5% Cuminum cyminum) when compared to control (-) group. This result agree with **Arun Kumar (٢٠١7)** Statistically, neither urea levels nor the activity of antioxidant enzymes changed in group II in a statistically significant way. In groups III (20 g/L M. spicata) and IV (40 g/L M. spicata), plasma urea and creatinine levels considerably (P0.0033) increased compared to the control group.

The average level of blood creatinine (mg/dl) in diabetic rats administered Cuminum cyminum is shown in Table (4). It was noticeable that the control (+) group's mean serum creatinine (mg/dl) value was significantly greater than the control (-) group's, coming in at 1.40 0.02 and 0.73 0.01, respectively. The difference between the control (-) and control (+) groups' percentage declines was -47.9%. All groups consumed (2%, 3%, and 5%). Cuminum cyminum*)* by different percentages showed significant decreases compared to control (+) group. The values were 1.3 ± 0.02, 1.10 ±0.11,and 0.90 ± 0.02, respectively. The percent of decreases were -7.1, -35.7, and -36.2, respectively. The best serum creatinine (mg/dl) was recorded for groups 5 (diabetic rats fed on (5% *Cuminum cyminum*) compared to the control group (-) group. This outcome concurs with Heikal et al (2012). In terms of statistics, neither the antioxidant enzyme activities nor the creatinine levels in group II changed significantly. Groups III (20 g/L M. spicata) and IV (40 g/L M. spicata) had plasma urea and creatinine levels that were significantly higher than those of the control group. (P 0.0033).

**Table (8): Effect of various Cichorium concentrations on Rats' Kidney Functions**

| Parameter / Groups | Creatinine (mg/dl) | | | Uric acid (mg/dl) | | |
|---|---|---|---|---|---|---|
| | **Mean±SD** | **%change** | **L.S.D** | **Mean±SD** | **%change** | **L.S.D** |
| G1: control (-) | $0.73^{a}$±0.01 | -47.9 | 0.07 | $108^{a}$±0.03 | 88.24 | 0.15 |
| G2: control (+) | $1.4^{b}$±0.02 | | | $4.46^{b}$±21 | | |
| *G3: 2% Cuminum cyminum* | $1.3^{e}$±0.02 | -7.1 | | $3.2^{c}$±0.01 | 19.61 | |
| *G3: 3% Cuminum cyminum* | $1.10^{a}$±0.11 | -21.4 | | $2.6^{d}$±0.04 | 30.39 | |
| *G5: 5% Cuminum cyminum* | $0.90^{de}$±0.02 | -36.7 | | $2.24^{de}$±0.06 | 11.76 | |

Data is presented as mean SD. The mean value for the same column with various letters is significantly different (P 0.05).

**Conclusion**

Overall, the findings of the present investigation demonstrated that, after 28 days, oral administration of Cuminum cyminum had positive effects on a sample of healthy albino rats' clinical symptoms, body mass, food, and water intake, haematological, biochemistry, and organ histology.

. The study found that the best results were in experimental groups No. 5, which contains 5% cumin

**RECOMMENDATIONS**

- the various amount of cumin powder, particularly that of 5% is useful to diabetic patient
- Various doses of cumin powder may be recommended to improve liver and kidney function.

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# التأثيرات العلاجية الفعالة لـلكمون على التغيرات البيولوجية لدى الفئران المصابة بداء السكرى

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**الملخص:**
تضيف الأعشاب الطبيعية الطعم واللون والرائحة للطعام، وبالإضافة إلى ذلك تمتلك الأعشاب الطبيعية فوائد عديدة للجسم تم الكشف عنها في الطب البديل منذ قديم الزمان، وقد أثبتت هذة الاعشاب العديد من الفوائد بفضل وجود العديد من العناصر الغذائية و المواد الفعالة . ويحتوى الكمون أيضًا على مجموعة متنوعة من الخصائص الدوائية ، لذا تهدف هذه الدراسة إلى تحديد التأثيرات العلاجية الفعالة لـــلكمون على التغيرات البيولوجية لدى الفئران المصابة بداء السكرى . استخدمت الدراسة ٣٠ فأر البينو ابيض يوزن كل منها ١٧٠ جرامًا وعمرها عشرة أسابيع ، وتم تقسيم الفئران الى خمس مجاميع وكل مجموعة تحتوى على ٦ فئران و نجد ان اربع مجاميع تم حقنهم بالألوكسان لاحداث مرض السكري ، بينما يوجد مجموعة واحدة كمجموعة ضابطة سالبة ( مجموعة فئران طبيعية تتغذى على نظام غذائي طبيعى) ، بينما يتم تغذية الثلاثة مجاميع التجريبية على الكمون بنسبة ٢ ٪ ، ٣ ٪ . ٥ ٪ لمدة شهر. وفى نهاية التجربة تم ذبح الفئران وتم جمع عينات الدم لاجراء التحاليل البيوكيميائية.و قد أظهرت النتائج أن المجموعة الخامسة و التى تغذت على ٥%كمون رصدت افضل نتيجة فى سكر الدم و ذلك عند المقارنة بالمجموعة الضابطة السالبة ، بينما نجد المجموعتان ٣ و ٥ والتى تغذت على ( ٢%و ٥% كمون ) رصدت افضل نتائج فى انزيمات الكبد(AST) وذلك عند مقارنتها بالمجموعة الضابطة السالبة . اوصت الدراسة بإستخدام كميات مختلفة من مسحوق الكمون خاصة بنسبة ٥%حيث تعتبر مفيد لمرضى السكري ويمكن التوصية بجرعات مختلفة من مسحوق الكمون لتحسين وظائف الكبد والكلى.

الكلمات المفتاحية : الكمون – ارتفاع سكر الدم – التغيرات البيولوجي