The effects of rosemary, thyme and black seed levels powder on glucose level, cholesterol level and complete blood count

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تأثير مسحوق أوراق إكليل الجبل والزعتر والحبة السوداء على مستوى الجلوكوز والكلسترول والعدد الكلي للدم

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المستخلص:

أجريت هذه الدراسة من أكتوبر إلى يناير 2022–2023، بهدف دراسة تأثير مسحوق حبة البركة والزعتر وإكليل الجبل على مستويات الجلوكوز والكوليسترول وتعداد الدم الكامل. تم تقسيم ثلاثين مشاركًا (ذكور وإناث، متوسط أعمارهم 37 عامًا، وزنهم 66 كجم) إلى ثلاث مجموعات، تلقت كل منها 2 جرام من مسحوق النبات يوميًا لمدة 28 يومًا. المجموعة 1: 2 جرام من مسحوق حبة البركة، المجموعة 2: 2 جرام من مسحوق الزعتر، المجموعة 3: 2 جرام من مسحوق إكليل الجبل. تم تحليل عينات الدم في البداية وبعد 28 يومًا لتقييم التغيرات في سكر الدم والكوليسترول وتعداد الدم الكامل. تشير نتائج الدراسة إلى أن استخدام الحبة السوداء وإكليل الجبل والزعتر لم يظهر تأثيرات كبيرة على مكونات الدم بجرعة 2 جرام لمدة 28 يومًا. في حين كانت هناك بعض التغييرات العددية، مثل الاختلافات في مكونات الدم ومستويات الكوليسترول، إلا أنها لم تصل إلى أهمية إحصائية، حيث لم يؤد استخدام المكملات إلى أي تغيير كبير في مكونات الدم، على الرغم من وجود بعض الاختلافات العددية الملحوظة في الحالات الفردية. قد يكون هذا الافتقار إلى التغيير الكبير بسبب الجرعة المحدودة 2 جرام وقصر المدة 28 يومًا. ارتفعت مستويات الكوليسترول من 145.88 ± 40.62 إلى 161.00 ± 18.73 مجم/ديسيلتر بعد 28 يومًا من العلاج بجرعة 2 جرام من الحبة السوداء. ارتفعت مستويات الكوليسترول أيضًا من 101.20±41.28 إلى 127.62±29.70 مجم/ديسيلتر بعد 28 يومًا من العلاج بالزعتر. لا تقدم الدراسة بيانات دقيقة عن إكليل الجبل من حيث الكوليسترول، ولكن تم ذكر أن كل من الحبة السوداء وإكليل الجبل أدى إلى ارتفاع مستويات الكوليسترول مقارنة بالزعتر. الحبة السوداء أدت إلى انخفاض مستوى الجلوكوز في الدم من 110.22±18.65 إلى 97.11±9.49 مجم/ديسيلتر، أيضاً إكليل الجبل خفض مستوى الجلوكوز في الدم من 103.00±12.22 إلى 99.22±11.06 مجم/ديسيلتر، كما خفض الزعتر مستوى سكر الدم من 115.83±27.95 إلى 99.63±22.09 مجم/ديسيلتر.

الكلمات المفتاحية: *إكليل الجبل، الزعتر، الحبة السوداء، الدم، الجلوكوز، الكوليسترول.*

Abstract:

This study, conducted from October to January 2022-2023, aimed to examine the effects of black seed, thyme, and rosemary powders on glucose levels, cholesterol, and complete blood count (CBC). Thirty participants (both male and female, average age 37, weight 66 kg) were divided into three groups, each receiving 2 grams of the plant powders daily for 28 days. Group 1: 2 grams of black seed powder, Group 2: 2 grams of thyme powder, Group 3: 2 grams of rosemary powder. Blood samples were analyzed at the start and after 28 days to assess changes in blood sugar, cholesterol, and CBC. The results of the study indicate that the use of black seed, rosemary, and thyme did not show significant effects on blood components at a dose of 2 grams for a 28-day period. While there were some numerical changes, such as variations in blood components and cholesterol levels, they did not reach statistical significance. The use of the supplements did not result in any significant change in blood components, although there were some numerical differences noted in individual cases. This lack of significant change could be due to the limited dosage of 2 grams and the short duration of 28 days. Cholesterol levels increased from 145.88±40.62 to 161.00±18.73 mg/dL after 28 days with black seed, also increased from 101.20±41.28 to 127.62±29.70 mg/dL after 28 days with thyme. The study does not provide exact data for rosemary in terms of cholesterol, but it was mentioned that both black seed and rosemary led to higher cholesterol levels compared to thyme. Blood glucose decreased from 110.22±18.65 to 97.11±9.49 mg/dL with black Seed, decreased from 103.00±12.22 to 99.22±11.06 mg/dL with rosemary and decreased from 115.83±27.95 to 99.63±22.09 mg/dL with Thyme.

Keyword: *Rosemary,Thyme,Black Seed, Blood, Glucose, Cholesterol.*

Introduction:

Medicine Plants are high natural source of medicinal products used in traditional medicine and chemical entities for modern drugs. Medicinal plants are broadly used either directly (home remedies) or indirectly (modern medicines) by all sectors of inhabitants **(**Srinivasan et al., 2001).Various herbs have been used as treatment and prevention for several chronic diseases such as diabetes, hypercholesterolemia and triglyceridemia; one of those herbs is Rosemary, which has biological antioxidant mechanisms. Rosemary is a thorny Rhamnaceous plant which is widely distributed in Europe and South-Eastern Asia. It's used in traditional medicine for it's the rapeuticproperties **(**Labban et al., 2014).

Black seed:

belonging to family Ranunculaceae, possesses a wide range of pharmacological activities, including, carminative, antidiabetic, stimulant, analgesic, anti-pyretic and anti-inflammatory and diuretic (Lutterodt et al., 2010). The Black seed contain thymoquinine that has antibacterial, diuretic, hypotensive and immune-potentiating activities via increasing neutrophil percentage and hence increasing the defense mechanism of the body against infection (Kanter et al., 2005).

Thyme:

is an important medicinal plant (Al-Bayati, 2008) which belongs to the Lamiaceae family, ithas been used for centuries as spice, home remedy, drug, perfume and insecticide. In medicine, it isused as antispasmolytic, antibacterial, antifungal,

secrotolytic, expectorant, antiseptic, antlelmintic and antitusive as reported by other authors (Ocana, et al, 2012). Thyme thymol is one of the most important essential oils found in thyme and known for its antiseptic and antifungal properties. It also contains other volatile oils such as carvacolo, geraneol and borneol (Vineetha, 2014).

Rosemary:

is a thorny Rhamnaceous plant which is widely distributed in Europe and South-Eastern Asia. It's used in traditional medicine for its therapeutic properties. Rosemary composed of dried leaves and flowers constitutes a particularly interesting source of biologically active phytochemicals as it contains a variety of phenolic compounds including carnosol, carnosic acid, rosmanol,7-methyl-epirosmanol, isorosmanol, rosmadial and caffeic acid, with substantial *in vitro* antioxidant activity. (El Deeb et al., 1993).This Study Aimed To Investigate The Effects Of Black Seed , Thyme And Rosemary Leaves Powder On Glucose Level, Cholesterol Level and Complete Blood Count.

Materials and methods:

Study time:

This study was conducted during the period (October-January) 2022-2023 to determine the effects of rosemary, thyme and black seed leaves powder on glucose level, cholesterol level and complete blood count.

Sample size:

A total number of 30 male and female , aged 37 years, then divided into three treatments (10 person in each). each with weights of 66 kg at the beginning of the study. Blood samples are taken from the vein and placed in test tubes. An analysis is performed on the level of sugar in blood, cholesterol, and complete in blood count (CBC).Tow grams of powdered aromatic plants black seed, thyme and rosemary are given for a period of 28 days in the morning. three treatment taken were formulated such that:

Treatment1: were taken them with 2 g/.Black seed (adding to drinking).

Treatment 2: were taken them with 2 g/.Thyme (adding to drinking).

Treatment 3: were taken them with 2 g/.Rosemary (adding to drinking).

After the end of the period the 28 days. previous steps are repeated. Recording data. Analyzing data statistically and comparing it with previous studies, Writing discussion and making recommendations.

Source of treatments:

The black seed ,rosemary and thyme Purchased from Aromatic market, the grind of black seed, rosemary and thyme (using electric grinder), were added to the diets during manufacture process as devoted to the study at levels of 2 g doses, of each for 28 days.

Statistical analysis:

The results were expressed as the mean ± SEM. All data were analyzed using T. test and one-way analysis of variance (ANOVA) using SPSS 16.0 statistical software (SPSS, 2008). Significant differences between means were detected using new Duncan multiple range test (Duncan, 1955).

Results and discussion:

Results:

Through the results obtained and shown in the attached tables, the use of aromatic plants as therapeutic materials and their effect on blood components and their use as alternatives to chemical treatments and from our study represented in giving a dose of 2 grams of black seed powder, rosemary and thyme for a period of 28 days to two groups of 30 males and females and before starting the operation Dealing with different treatments, blood was drawn to perform the required analyzes, and doses of 2 grams were started for a period of 28 days, and after the period had expired, the blood was drawn and the same analysis was performed, and the results were taken and analyzed statistically. From the results of the statistical analysis, we obtained the results shown in the attached tables.

The effect of using treatment on components blood:

Tables (1.2.3) shows the effect of using black seed, rosemary and thyme on blood components, as we note from the tables there is no effect on blood components as a result of using 2 grams of each of the additives during a period of 28 days on blood components, except that there are numerical differences for some cases and at the same time recorded In some individual cases, there were significant differences in the decrease and increase in the normal range, and the lack of effect may be due to the small size of the dose of 2 grams, as well as the period of giving it 28 days.

The effect of using treatment on the level of cholesterol and the level of blood sugar:

Table (4) shows the effect of using black seed, rosemary and thyme on the level of cholesterol and the level of blood sugar. From the table, we notice a rise in the level of cholesterol when giving 2 grams for 28 days of black seed, where the average concentration of cholesterol before giving the dose was 145.88 ± 40.62 mg/mL, and the average concentration Cholesterol after the treatment 161.00± 18.73, and the cholesterol level was not affected by giving 2 grams of thyme for 28 days of rosemary, but when giving thyme, the level of cholesterol increased as well as the average concentration of cholesterol before giving it was 41.28 ± 101.20 mg/dL, and the concentration of cholesterol after giving 2 grams of thyme for 28 days was 127.62±29.70 mg/dL, while The level of blood sugar decreased in all treatments, where the average glucose level before giving 2 grams for 28 days of black seed, rosemary and thyme was 110.22±18.65, 103.00±12.22 mg/dL, 115.83 ± 27.95 mg/dL respectively, and the average glucose level after giving the dose of 2 grams for 28 days. 97.11±9.49 mg/dL mg/dL, 99.22±11.06, 99.63±22.09 mg/dL.Table (5) shows the difference between the treatments used in blood components, cholesterol level, and blood sugar level.Where we notice that thyme results were greater in values, but it is a numerical and not significant increase in blood components. As for the level of sugar, the results were similar for all treatments.From the table, we notice that cholesterol is higher in both rosemary and black seed, compared to thyme.

Discussion:

From the results obtained and shown in the tables, which showed that the addition of 2 grams of black seed powder, rosemary and thyme for 28 days to donors did not have a significant effect on blood components represented in HCT, HGB, RBC, WBC and PLT,MCHC, MCT, MCV As for the cholesterol level, it increased when black seed or

thyme was given, and it was not affected when rosemary was given. As for the level of glucose in the blood, it decreased in all treatments and when comparing our study with previous studies,

Black seed:

The results of our study contradicted (Asgary et al., 2008) an increase in hemoglobin, hematocrit, and white blood cell count and contradicted (Tousson et al., 2011) where it was found that the number of platelets increased with dietary supplementation of black seed. And our results agreed with those presented by (Miraghaee et al., 2011) showed that the number of RBCs and WBCs did not differ between the control group and the 1% BS supplemented group in broiler chickens. (Shewita and Taha, 2011) reported non-significant differences in WBC count. As for (El-Halim et al., 2014) examined changes in hematological values after feeding a diet including BS oil (47 g/kg concentrate) to sheep, and found significantly lower values in mean total white blood cells of the treated group than in the treated group. control, while total red blood cells, packed cell volume, mean body volume, mean body hemoglobin, and body hemoglobin concentrations were not affected by diet with NS oil supplementation. (Jaafar et al., 2014) showed that hemoglobin concentration, PCV%, red and white blood cell counts and differential white blood cell count were approximately similar in all groups. The results of the study of the level of cholesterol in the blood showed that there are no significant differences when taking the black seed, perhaps the reason is the quantity of the dose and the short period of giving it, as our results contradicted with Ahmad et al., 2013) showed an anti-hypercholesterolemic effect of black seed by decreasing the level of HMG-CoA reductase, a rate-limiting enzyme in cholesterol synthesis, to produce protective effects on dyslipidemia.

Rosmary:

The results of our study agreed with (Labban et al., 2014) and (Vijayan et al., 2004) when using rosemary leaf powder and found to improve the lipid profile of the blood, which contributes to the reduction of cardiovascular disease. It was found that both doses (2 and 5 g/day) of R. officnalis leaf powder had therapeutic potential. They have hypolipidemic, hypoglycemic and antioxidant properties but the higher dose of 10g/day was more efficient. **(**Tahraoui et al., 2007). He indicated that rosemary was also used traditionally to treat diabetes and high blood pressure in Morocco.

Thyem:

The results of our study contradicted with Results presented by (El-Ghousein and Al-Beitawi, 2009) reported that dietary thyme has hypocholesterolemic and antilipidemic effects on blood parameters. and contradicted with (Rostami et al., 2012) found that supplemental dietary thyme significantly decreased blood serum levels of triglycerides and total cholesterol in Japanese quail. And agrement with (Khaksar et al., 2012), who reported that Japanese quail fed thyme essential oil-supplemented diet exhibited significantly lower levels of serum glucose, cholesterol compared with the control birds. In addition, (El-Ghousein and Al-Beitawi, 2009) reported that blood serum level sglucose of broiler chicks were significantly increased due to feeding dietary thyme (1.0%, 1.5% and 2.0%) while levels of cholesterol were significantly decreased. Also (Al-Kassie, 2009) found that broiler chicks fed thyme oil extract exhibited significantly but level of

cholesterol was significantly decreased compared with the control group. (Toghyani et al., 2011) evaluated the effect of thyme powder on biochemical parameters of broiler chicks. They found no effect of dietary thyme on blood serum levels of cholesterol were significantly reduced in response to feeding thyme-containing diets. Similarly, (Mansoub and Myandoab, 2011) showed that feeding thyme-containing diets significantly reduced blood serum level cholesterol were not affected as compared to the control group. Other investigators failed to find any beneficial effects of thyme on the cholesterol level in birds. In this context, (Sengul et al., 2008) indicated that levels of blood plasma cholesterol. containing diets compared with the control group.

Conclusion:

From the results obtained by giving 2 grams of black seed and rosemary for a period of 28 days, we conclude following:

1- There was no effect on blood components WBC - RBC - HB- HCT - MCV - MCH – MCHC- PLT.

2- A relative decrease in cholesterol occurred when rosemary was treated.

3- An increase in cholesterol occurred in the treatment of black seed and thyme**.**

4-decrease in the level of sugar in all transactions.

Table (1) Effect of using black seed, rosemary and thyme on blood components.

Treatment	Items	WBC $\times 10^3$ /µl	*P* Value	RBC $\times 10^6$/µl	*P* Value	HGB g/dl	*P* Value
Black seed	Before	7.18±1.40	0.24	4.69±0.41	0.82	13.34±1.64	0.71
	After	6.40±1.34		4.71±0.48		13.54±2.05	
Rosemary	Before	7.13±1.36	0.23	4.81±0.52	0.91	13.36±1.54	0.72
	After	6.42±2.22		4.80±0.46		13.32±1.58	
Thyme	Before	6.53±2.29	0.16	4.24±1.67	0.42	14.33±1.99	0.57
	After	7.40±1.81		4.70±0.69		14.13±1.69	

Table (2) Effect of using black seed, rosemary and thyme on blood components.

Treatment	Items	HCT %	*P* Value	MCV µm^3	*P* Value	MCH pg/cell	*P* Value
Black seed	Before	39.42±4.44	0.89	83.96±3.74	0.94	28.37±1.30	0.69
	After	39.60±5.00		83.86±3.89		28.62±2.05	
Rosemary	Before	39.92±4.28	0.53	83.08±40.00	0.29	27.85±2.20	0.58
	After	39.64±4.01		78.57±15.72		27.75±2.23	
Thyme	Before	40.70±4.52	0.98	86.10±3.70	0.28	30.20±1.17	0.95
	After	40.71±4.64		87.08±4.38		30.16±1.94	

Table (3) Effect of using black seed, rosemary and thyme on blood components.

Treatment	Items	MCHC g/dL	*P* Value	PLT 10^3 /µl	P.Value
Black seed	Before	33.83±0.89	0.51	281.20±34.44	0.69
	After	34.10±0.98		288.37 ±40.19	
Rosemary	Before	33.48±1.44	0.68	288.11±88.04	0.19
	After	33.56±1.30		267.44±53.70	
Thyme	Before	35.16±1.25	0.54	265.00±67.78	0.72
	After	34.66±1.01		260.66±48.28	

Table (4) Effect of using black seed, rosemary and thyme on the level of cholesterol and the level of blood sugar

Treatment	Items	FBS mg/dL	*P* Value	CHOL mg/dL	*P* Value
Black seed	Before	110.22±18.65	0.10	145.00±40.62	0.38
	After	97.11±9.49		161.00±38.73	
Rosemary	Before	103.00±12.22	0.17	176.33±28.04	0.35
	After	99.22±11.06		171.00±28.85	
Thyme	Before	115.83±27.95	0.08	101.20±41.28	0.04
	After	99.63±22.09		127.62±29.70	

Table (5) The difference between the treatments used in blood components, cholesterol.

Variables	Treatment			
	Black seed	**Rosemary**	**Thyme**	***P.Value***
WBC×10^3/µL	6.40±0.44	6.42±0.74	7.40±0.73	0.52
RBC×10^6/ml	4.71±0.16	4.80±0.15	4.70±0.28	0.91
HGB g/dl	13.54±0.68	13.32±0.52	14.13±0.69	0.69
HCT %	39.60±1.66	39.64±1.33	40.71±1.89	0.87
MCV fL	83.86±1.29	78.57±5.24	87.08±1.78	0.28
MCHpg	28.62±0.68	27.75±0.74	30.16±0.79	0.11
MCHC g/dl	34.10±0.32	33.56±0.43	34.66±0.43	0.20
PLT×10^3/µL	288.37±40.19	267.44±53.70	260.66±48.28	0.50
FBS mg/dL	97.11±3.16	99.22±3.68	99.63±9.01	0.92
CHOL mg/dL	161±12.91	171±9.61	127±13.28	0.08

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