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Effect of *Salvia officinalis* and *Zingiber officinaler* Extracts on Some Physiological and Biochemical Parameters of Mice

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ABSTRACT

Background Sage and ginger are considered from the medicinal and aromatic herbs and as a treatment method in traditional medicine a variety of diseases and is also used as a spice for cooking. Methodology The treatments were divided into three groups for each extract of the plant extracts of sage and ginger. The first group was dosed with sage extract at the rate of 0.5 ml per day for thirty days and the second group with alcoholic extract after disposal, of alcohol in the same quantity and the latter was left without a control dose. The same process was repeated on the ginger plant, then the blood was drawn and the amount of sugar was measured in all the groups Blood was drawn a month after the mice were infused with plant extracts, and some tests were conducted that included checking blood sugar, cholesterol, triglycerides, urea and creatinine. The present study showed significant decrease in the level of blood sugar between 60 to 64 mg/100 for ginger plant and sage aqueous extract respectively, compared to the control group 110 mg/100 ml. Ginger and sage aqueous extract also significantly reduced the level of urea in the blood to 18.21 mg /100 ml compared to the control 40 mg / 100 ml. The present work found that both sage and ginger have a vital role in the treatment of various damage and diseases. This may well be a type of treatment as drug role.

Keywords- *Salvia officinalis* and *Zingiber officinaler* extracts, physiological parameters.

I. INTRODUCTION

Sagebrush contains a high percentage of essential oils. Sagebrush is an aromatic plant that produces various essential oils such as Monoterpenes and Sesquiterpenes·[1,2] Sagebrush contains essential oils such as Borneole, Cineole, and Thujone.[3,4] There are 34 active compounds in sagebrush of the S. leriifolia class, as the leaf oil represents 98.9, which is a high percentage compared to the stalk oil, which represents 92.4.[5] Active ingredients such as Thymol and Carvacrol.[6] The most powerful active ingredients in sage essential oils are Cineole, Borneol and Thujone. [7,8,9] discovered Sage oil, in its fundamental form consists of borneol (3.06%), limonene (1.74%), α-humulene (5.59%), humulene epoxide (1.02%) and caryophyllene (3.16%). Several major components of sage essential oil were eucalyptol, (+) -The chemical composition is as follows: 14.46% 2-bornanone; 14.33% alpha-pinene; 14.00% beta-pinene; 7.53% camphene; 6.27% alpha-pinene. [10,11] Zingiber, the scientific name for ginger, is a perennial plant in the family Zingiberaceae. roots.

The plant has purple flowers with erect, leafy aerial stem to 1 meter. Ginger has been grown for thousands of years. around the world. It is began in China and then grown in Caribbean, India, West Africa and Southeast Asia [12]

Fibrous and almost dry, mature ginger roots have a pungent aroma. It's versatile enough to be used in a wide variety of recipes. It's used to produce ginger tea, which is a hot beverage that's often sweetened with honey.; You can also add sliced orange fruit or lemongrass. Usually dried ginger root (ginger powder) is used as a spice and is also used as a flavoring.[13]

Ginger has many different roles including, as a food, encourages digestion, in the treatment of colic, dryness and bacterial infections [14]

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II. METHODOLOGY

Aqueous and alcoholic extract of sagebrush

Sage and ginger were cut into very small pieces, then 50 g of each plant was dried and then extracted using distilled water 250 ml with a saxolith device for an hour at a temperature of 40 ° C.[15]

Aqueous and alcoholic extract of ginger

Sage and ginger were cut into very small pieces, then 50 g of each plant was dried and then extracted using methyl alcohol 250 ml with a saxolith device for an hour at a temperature of 40 ° C. Then the alcohol was evaporated with a vaporizer.[3]

Rats dosed with plant extracts

The treatments were divided into three groups for each extract of the plant extracts of sage and ginger. The first group was dosed with sage extract at the rate of 0.5 ml per day for thirty days and the second group with alcoholic extract after disposal, of alcohol in the same quantity and the latter was left without a control dose. The same process was repeated on the ginger plant, then the blood was drawn and the amount of sugar was measured in all the groups.

Biochemical and physiological test

Blood was drawn a month after the mice were infused with plant extracts, and some tests were conducted that included checking blood sugar, cholesterol, triglycerides, urea and creatinin.

III. RESULT AND DISCUSSION

Table 1: Effect of *Salvia officinalis* and *Zingiber officinaler* extracts blood sugar of mice

Descriptive Statistics			
Dependent Variable: concentration of blood sugar			
Aqueous and alcoholic extract of sagebrush	**type of plant**	**Mean**	**Std. Deviation**
Aqueous extract	sagebrush	64.00	11.402
	ginger	60.00	23.452
	Total	62.00	17.512
alcoholic extract	sagebrush	72.00	8.367
	ginger	70.00	7.071
	Total	71.00	7.379
control		110.00	12.247
		108.00	8.367
	Total	109.00	9.944

Table 1 shows the effect of aqueous and alcoholic extracts of sage and ginger on the level of sugar in the blood of experimental rats The results showed that there were significant differences in lowering the blood sugar level, as it reached 64 in the first treatment in which the aqueous extract of sage was used mg/100 ml and for ginger plant it was 60 mg/100 ml compared to the control 110 mg/100 ml As shown in Figure 1. Also, the alcoholic extract of the same plants showed differences It is also significant in reducing the level of sugar in the blood, and this is due to the fact that sagebrush contains essential oils such as Borneole, Cineole and Thujone 34, an effective compound in sage. Multiple studies have proven that ginger is effective in treating nausea caused by seasickness, morning sickness, and chemotherapy. Ginger may also reduce joint pain caused by arthritis, and may lower cholesterol and may be useful in treating heart and lung pathogens. The aroma and flavor compounds found in ginger root, including gingerone, shoagoles, and gingerols., and that ginger contains volatile oils, which make up about 1-3% of the weight of fresh ginger that ginger is effective in treating infections, rheumatism, cold, heat cramps and diabetes.

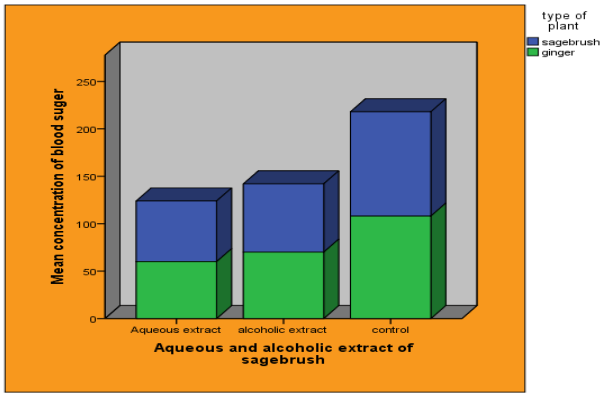

Figure 1: Effect of *Salvia officinalis* and *Zingiber officinaler* extracts blood sugar of mice

Table 2: Effect of *Salvia officinalis* and *Zingiber officinaler* extracts blood Urea of mice

Descriptive Statistics			
Dependent Variable: concentration of blood urea			
Aqueous and alcoholic extract of sagebrush	**type of plant**	**Mean**	**Std. Deviation**
Aqueous extract	**sagebrush**	**18.40**	**4.506**
	ginger	**24.40**	**5.459**
	Total	**21.40**	**5.680**
alcoholic extract	**sagebrush**	**24.00**	**1.414**
	ginger	**17.00**	**4.690**
	Total	**20.50**	**4.927**
control		**40.00**	**4.301**
		40.20	**5.675**

Table 1 shows the effect of aqueous and alcoholic extracts of sage and ginger on the level of Urea in the blood of experimental rats.

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As shown in figure (2), the aqueous extract of sage and ginger has an in reduction the level of urea in the blood to 18.21 mg / 100 in comparison to the control group which observed 40 mg / 100 ml, and the treatments that used the alcoholic extract as well as the plants that would lower the level of urea in the blood gave good results in lowering the concentration of urea in the blood when compared to the control, and this illustrates how important the active ingredients in this product are. The main reason for this could be the inhibition of the metabolic pathways whose end product is urea.

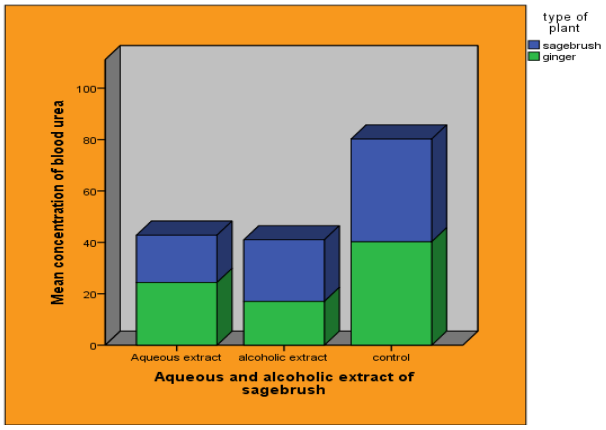

Figure 2: The Influence of Extracts from Salvia officinalis and Zingiber officinale on Mice Blood Urea

Table 3: Analysis of the effect of Salvia officinalis and ginger root extracts on mouse serum creatinine.

Descriptive Statistics			
Dependent Variable: concentration of serum creatinine			
Aqueous and alcoholic extract of sagebrush	**type of plant**	**Mean**	**Std. Deviation**
Aqueous extract	sagebrush	.420	.0837
	ginger	.400	.1000
	Total	.410	.0876
alcoholic extract	sagebrush	.360	.1140
	ginger	.380	.1304
	Total	.370	.1160
control	sagebrush	1.000	.0000
	ginger	1.000	.0000
	Total	1.000	.0000

Table 3 shows the effect of the aqueous and alcoholic extract of sage and ginger on the creatinine concentration in the blood of mice in the experiment, where there were significant differences in the decrease in creatinine concentration in all treatments compared to the control. Consecutive compared to control 1 mg/100 ml This is because ginger contains volatile oil that has a pungent smell and a pungent taste that contains major compounds, including Neral, beta-phelanddrine, Linallol, Zingeberol, Zingiberene, Curcumene, Geraniol, D-Camphor as well as containing a group of Aryl alkanes and the most important compounds of this group Gingerols, which contains It contains gingenol, the compound to which the spicy taste is attributed. Phytochemical analysis of ginger extracts indicated that the methanol extract possesses phenols, saponins, tannins, and flavonoids, but the presence of glycosides was not detected, and that α-pinene and α- felladren are active substances present that work to interrupt the metabolic pathways whose final product is creatinine.

Table 4: Effect of *Salvia officinalis* and *Zingiber officinaler* extracts serum cholesterol of mice

Descriptive Statistics			
Dependent Variable: concentration of serum cholesterol			
Aqueous and alcoholic extract of sagebrush	**type of plant**	**Mean**	**Std. Deviation**
Aqueous extract	sagebrush	125.60	5.505
	ginger	126.80	5.675
	Total	126.20	5.308
alcoholic extract	sagebrush	142.80	8.614
	ginger	137.60	11.803
	Total	140.20	10.119
control		184.80	6.261
		181.00	6.481
	Total	182.90	6.332

Table 4 shows the effect of sage and ginger extract on lowering the level of cholesterol in the blood. The results showed that there were significant differences in the level of cholesterol between treatments and control, where the level of cholesterol in the treatment of aqueous extract of sage and ginger, respectively, reached 125 and 126 mg/100 ml compared to the control. 184 mg/100 ml, and the level of cholesterol in the alcoholic extract of sage and ginger, respectively, reached 137,142 mg/100 compared to the control 182 mg/100 ml as shown in Figure 3. Chemical analyzes indicate that ginger contains compounds that are effective against a number of microorganisms, and these compounds are zingerone and gingerols, and it also contains shogaols, and volatile oils composed of sesqiterpenoids, bisabolene, cineol, farnesene β-sesquiphhellandrene, phenyl propanoid that stimulates the enzyme dihydrogenase, which lowers cholesterol in the blood.

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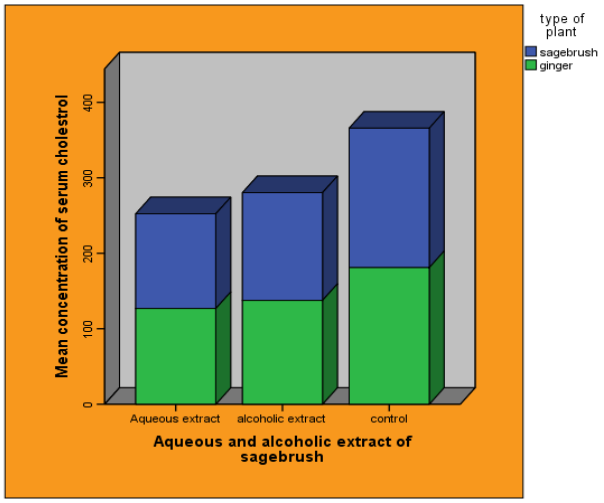

Figure 3: Effect of *Salvia officinalis* and *Zingiber officinaler* extracts serum cholesterol of mice

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