

Potential Therapeutic Effects of Guava Leaves and Chamomile Flowers Powder against Liver Toxicity in Rats Induced by Carbon Tetrachloride

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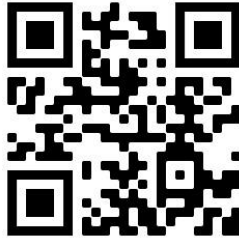
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Potential Therapeutic Effects of Guava Leaves and Chamomile Flowers Powder against Liver Toxicity in Rats Induced by Carbon Tetrachloride

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ABSTRACT

The present study was aimed to investigate the potential therapeutic effect of different concentrations of guava leaves powder (GLP), chamomile flowers powder (CFP) and their mixture (Mix) against CCl₄ - induced liver toxicity in rats. Forty male albino rats weighting (150±10 g) were allocated in two main groups, the first group (n=5): Fed on basal diet and kept as a negative control group. The second main group (hepatic rats): All rats (n=35) were injected by CCl₄ to induce hepatotoxicity. After induction, rats were allocated in 7 groups as following: Group 2: Fed on basal diet (positive control group). Groups 3 and 4: Fed on basal diet +2 and 4% CFP, respectively. Groups 5 and 6: Fed on basal diet +2 and 4% GLP, respectively. Finally, groups 7 and 8: Fed on basal diet +2 and 4% Mix, respectively. The experiment lasted for 28 days. The results indicated that the best values were recorded in group eight (4% Mix) with percent of change 32.00 & 48.97 for ALT& AST, respectively, and 49.51, 47.63 and 59.40 for urea, uric acid, and creatine, respectively. Therefore, this study recommended the combination of GLP and CFP to provide more effective results in the treatment of liver toxicity induced by carbon tetrachloride.

Key words: Albumin; liver functions; leaves; hepatic diseases.

INTRODUCTION:

The liver is a highly metabolically active organ located in the right upper abdomen (**Abdel-Misih and Bloodston, 2010**). Any damage weakens the function of liver is called liver disease, that is the most serious ailment (**Maheswari et al., 2008**). Liver diseases can be inherited or caused by a variety of factors such as virus, drugs, chemicals (high doses of paracetamol, carbon tetrachloride and alcohol), diabetes, or an attack from own immune system (**Sivakrishnan, 2019**). Liver diseases account for approximately 2 million deaths per year worldwide (**Asrani et al., 2019**). Plants used in traditional medicine have attracted the interest of researchers and they observed that about three quarters of the world's use traditional medicines to cure liver disorders according to WHO estimation. Hepatoprotective plants used in traditional medicine have already been reported to possess strong antioxidants because of their high content of phytochemicals (**Aniya et al., 2002; Pandey, 2011 and Wilma et al., 2011**). Additionally, their obtained results referred to the combination of different herbal fractions is likely to provide desired activity to cure severe liver disease. Therefore, it is important to explore the effect of natural products of plants rich in flavonoids such as guava leaves and chamomile flowers that could be effective and promising curative agents against CCl_4 .

Guava (*Psidium guajava*) is a fruit tree of the family of *Myrtaceae*, native from South America. Guava leaves are used in folk medicine for prevention and treatment of some diseases such as respiratory disorders, diabetes, and cancer **Oh et al., (2005); Ryu et al., (2012) and Naseer et al., (2018)**. Due to the presence of active flavonoid compounds such as quercetin, guava leaves possess antioxidant, antibacterial and anti-inflammatory properties **Limsong et al., (2004); Soman et al., (2010) and Nantitanon and Okonogi, (2012)**. Bioactive polyphenols in guava leaves act as a scavenger of free radicals **Chen and Yen, (2007); Metwally et al., (2010) and Fu et al., (2010)**. Experimental studies showed that guava leaves extract possess hepatoprotective action **Roy et al., (2006)**. Guava leaves powder supplementation ameliorated hepatic steatosis in obese rats **Almamun et al., (2019)**.

Chamomile (*Matricaria chamomilla*, L.) is one of the most popular herbal teas of the world and almost a million cups are consumed everyday **Srivastava et al., (2010)**. The plant is widely used in medical practice as an alternative antidiarrheal treatment **Diaza et al., (2014)**. Studies in preclinical models suggested that chamomile inhibits *Helicobacter pylori*, the bacteria that result in gastric ulcers **Wu, (2006) and Sharrif, (2011)**. Consumption of chamomile tea boosts the immune system and helps fight infections **Wang et al., (2005)**. There are about 1-2% volatile oils and other flavonoids which possess antimicrobial, anti-inflammatory and antioxidant activities in chamomile **Carnat et al., (2004); Pena et al., (2006); Singh et al., (2011) and Abdoul-Latif et al., (2011)**. Furthermore, chamomile as one of the richest sources of dietary antioxidants can be used to increase shelf-life of food products without significantly modifying of nutritional characteristics **Paya et al., (1992); Khaki et al., (2012) and Caleja et al., (2015)**. Oral administration of chamomile extract as herbal tea also may be beneficial for patients who suffer from liver diseases and oxidative stress **Al baroudi, (2013)**.

Therefore, the present study designed to evaluate the potential therapeutic effects of GLP, CFP and their Mix in different concentrations (2 and 4%) against CCl₄ - induced liver toxicity in rats.

MATERIALS AND METHODS:

Materials: Fresh guava leaves were purchased from local market of Shibben El-Kom, Menoufia Governorate, Egypt. While chamomile flowers were obtained from Agricultural Seed, Spices and Medicinal Plants Co. (Harras), Cairo, Egypt. Casein, cellulose, choline chloride powder, and DL- methionine powder, were obtained from Morgan Co. Cairo, Egypt.

Rats: Forty adult white male albino rats weighing (150 ± 10 g), were obtained from research Institute of Ophthalmology, Medical Analysis Department Giza, Egypt.

Methods:

Samples preparation

Fresh guava leaves were washed thoroughly under running tap water. Then dried at 45°C in drying oven (Plue Pard ng oven T. S100, Taiwan) for 20 hours and milled to powder form. Also, chamomile flowers were milled to obtain the powder.

Induction of liver toxicity in rats

Thirty- five male albino rats were injected subcutaneous with (0.5 ml of 1:1 mixture of CCl₄ and olive oil) based on a calculated (2ml /kg b.wt.) twice a week for two week to induce damage of the liver according to the method described by **Jayasekhar *et al.*, (1997)**.

Experimental design

The experiment was performed at the Faculty of Home Economics, Menoufia University, Egypt. All rats (40) were fed on basal diet for one week for adaptation, divided into two main groups. The first main group (n=5): rats, were fed on the basal diet only as control negative (Normal animals). The second main group (n=35): Rats were injected by CCl₄ (hepatic rats).Induced rats were divided randomly into 7 groups (n=5) as follow : Group (2): Fed on basal diet only as a positive control group, Group (3): Basal diet + 2% CFP, Group (4): Basal diet + 4% CFP, Group (5): Basal diet+ 2% GLP, Group (6): basal diet + 4% GLP, Group (7): Basal diet + 2% 1:1 Mix of both and Group (8): Basal diet+ 4% 1:1 Mix of both.The experiment lasted for 28 days.

Biological Evaluation

Blood sampling

At the end of experimental period all rats were anesthetized with diethyl ether after 12 hours fasting, blood samples were received from portal vein into clean dry centrifuge tubes in which blood samples left to clot at room temperature then centrifuged for 10 minutes at 3000 rpm to separate the serum, all serum samples were stored frozen till analysis **Malhotra, (2003)**.

Biochemical analysis

Different tested parameters in serum were determined using specific methods as follow: Serum total cholesterol, triglyceride (TG) and high density lipoprotein (HDL-c) were determined by using methods of **Allain *et al.*, (1974); Fossati and Prencipe, (1982) and Lopez-Virella, (1977)** respectively. The determination of low-density lipoprotein cholesterol (LDLc) and very low-density lipoprotein cholesterol (VLDLc) were carried out according to the methods of **Lee and Nieman, (1996)**. Serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) & alkaline phosphatase activities (ALP) were determined according to **Belfield and Goldberg, (1971); Yound, (1975) and Tietz, (1976)**.

Statistical analysis

The data were analyzed using a completely randomized factorial design **SAS, (1988)** when a significant main effect was detected; the means were separated with the Student-Newman-Keuls Test. Differences between treatments of ($P \leq 0.05$) were considered significant using Costat Program. Biological results were analyzed by One Way ANOVA.

RESULTS AND DISCUSSION:

Effect of CFP, GLP and their Mix on liver functions of hepatic rats: Data in table (1) indicate the effect of CFP, GLP and their Mix on liver functions of hepatic rats. The obtained results showed that CCl₄ can cause alterations in the level of hepatic biochemical markers through increasing the serum levels of alanine amino transferase (ALT), aspartate amino transferase (AST) and alkaline phosphatase (ALP) with percent of change 36.00, 57.14 and 36.00, respectively. On the other side, it resulted in a significant decrease ($p \leq 0.05$) in serum albumin and total protein of hepatic rats when compared to negative control group with percent of change 67.59 and 61.31, respectively. This finding agreed with **Mujumdar *et al.*, (1998) and Fararh *et al.*, (2016)** who attributed the elevated liver enzymes level in CCl₄ induced rats to the degenerative changes and damage in liver tissues and cell membrane permeability. A significant decrease in the elevated

levels of liver enzymes was noticed in treated groups when compared to positive control rats. There was a significant increase ($p \leq 0.05$) in both albumin and total protein after administration of CFP, GLP and their Mix for 28 days in different concentrations (2 and 4%). The best values of liver enzymes were recorded in group eight (4% Mix) with percent of change 32.00 & 48.97 for ALT & AST, respectively. In contrast, the lowest values of liver enzymes were recorded in group five (2% GLP) with percent of change 11.60, 36.45 and 14.85 for ALT, AST, and ALP, respectively. As for the decreased levels of serum albumin and total protein, the best improvement was recorded for group four (4% CFP) with percent of change 63.12 and 55.55, respectively when compared to the positive group. Similar observation was obtained by **Al baroudi, (2013)** who reported that chamomile aqueous extract administration could increase albumin and total protein levels in the serum of hepatotoxic rats and may be beneficial for patients who suffer from liver diseases and oxidative stress. Additionally, our results were supported by **Gupta et al., (2006)** who mentioned that methanolic extract of chamomile possess hepatoprotective action through activation of antioxidant enzymes. Such as reported by **Hadaruga et al., (2009)** and **Sharafzadeh and Alizadeh, (2011)** who reported that the biological activity of chamomile might be attributed to the high content of flavonoids and essential oil constituents. In the same context, the treated groups with guava leaves powder showed a significant reduction of liver enzymes level when compared to positive control group. This effect was better in high dose of guava leaves powder (4%) than low dose (2%). These results also agreed with the findings of **Uboha et al., (2010)** who reported that guava leaves may be hepatoprotective potentials in both male and female rats. This was due to the phenolic content of guava leaves that possess antioxidant and hepatoprotective activity **Molla and Azene, (2017)**.

Effect of CFP, GLP and their Mix on kidney functions of hepatic rats: Data in table (2) show the effect of CFP, GLP and their Mix on kidney functions of hepatic rats. The present investigation showed that administration of CCl₄ by rats produced

a significant increase in serum urea, uric acid and creatinine, in positive control group when compared to the negative control group 55.33, 57.10 and 65.97, respectively. This finding agreed with **Safhi, (2018)** who reported that CCl₄ can induce nephrotoxicity in swiss albino mice characterized by a significant elevation in creatinine and blood urea nitrogen. Another study explained that CCl₄ exposure enhances reactive oxygen species production that can damage the kidney **Tirkey et al., (2005)** and **Ganie et al., (2011)**. In contrast, the treatment with CFP, GLP and their Mix with different concentrations (2 and 4%) resulted in marked reduction urea, uric acid, and creatine when compared to positive control group. The highest value has recorded in group eight (4% Mix) with % of change 49.51, 47.63 and 59.40 for urea, uric acid, and creatine, respectively. But, there were non-significant differences ($p \leq 0.05$) amongst treated groups with different concentrations in current study. These obtained results agreed with **Shati and El-kott, (2014)** who observed non-significant changes in serum urea and creatinine of induced hepato-nephrotoxicity rats that treated with chamomile. However, another study referred to the potential desirable effect of chamomile on serum creatinine level of patients with type 2 diabetes **Kaseb et al., (2018)**. They also explained that this effect might be due to antioxidants content of chamomile, that are considered one of the most important strategies for treatment. In the same context, several studies concluded that guava leaves possess nephroprotective effect and can improve renal functions in diabetic rats induced by STZ **Radwan et al., (2018)**. They also mentioned that the antioxidant activity of guava leaves extract may be effective factor in improving kidney functions. Additionally, guava leaves extract consumption did not have any influence on histopathology of kidney tissues at both high and low doses **Ukoha et al., (2014)**. Based on the previous results, administration of CFP, GLP and their Mix could play a beneficial role in reducing the kidney damage induced by CCl₄ because of their high content of antioxidants that can inhibit causes of damage.

Effect of CFP, GLP and their Mix on lipid profiles of hepatic rats: Data in tables (3 and 4) illustrate the effect of CFP, GLP and their Mix on total cholesterol, triglycerides and lipid profiles of hepatic rats. These results showed that CCl₄ produced a significant increasing ($p \leq 0.05$) in each of serum total cholesterol, triglycerides and LDLc with percent of change 43.24, 40.62 and 71.19, respectively. when compared to control (-). While CCl₄ administration induced a significant reduction ($p \leq 0.05$) in HDLc with a %of change 61.90 when compared to the control (-). Treatment with CFP, GLP and their Mix in different concentrations 2 and 4% as powder significantly improved serum lipid profile of rats ($p \leq 0.05$) when compared to positive group. Within treated groups the best values recorded in group eight (4% Mix) with % of change 36.75, 38.12 and 50.20 for total cholesterol, triglycerides and LDLc, respectively, and recorded a significant increasing ($p \leq 0.05$) in HDLc with a %of change 49.20 when compared to positive control group. The obtained results are in the same context of other findings which reported that guava leaves intake can reduce plasma total cholesterol, triglycerides, and low-density lipoprotein cholesterol **Mathur et al., (2015)**. Furthermore, guava leaves aqueous extract showed improved serum lipid profile via reducing each of triglycerides, total cholesterol, and LDL-cholesterol levels in addition to increasing of HDL-cholesterol levels in diabetic rats **Tella et al., (2019)**. As for chamomile, **Kaseb et al., (2018)** concluded that chamomile tea consumption has a desirable effect on both serum total cholesterol and LDLc of hyperglycemic patients.

Effect of CFP, GLP and their Mix on glucose level of hepatic rats: Data presented in table (5) show the effect of CFP, GLP and their Mix with different concentration (2 and 4%) on serum glucose level of hepatic rats. Data indicated that the highest value was recorded in the positive control group when compared to negative control group with a significant difference ($P \leq 0.05$). The mean values were 219 and 90.50 mg/dl, respectively. Within the treated groups, the best effect was recorded to 4% Mix treated group with mean value 101.00 mg/dl, when compared to the positive control group. While 2% CFP treated group was the

lowest with mean value 152.00 mg/dl. The obtained results agreed with **Tella et al., (2019)** who noticed a significant antidiabetic effect of guava leaves aqueous extract associated with increased glycogen storage. Similar trend mentioned by **Jayachandran et al., (2018)** hyperglycemia in streptozotocin (STZ) induced diabetic rats could be diminished by guava leaves administration through suppressing the oxidative stress and the state of inflammation. Additionally, it could be noticed that the high content of flavonoids might be responsible for antioxidant, anti-inflammatory and antihyperglycemic activities of guava leaves extract **Benavente-García and Castillo, (2008)**. The antidiabetic activity of guava leaves contributed to their high content of quercetin that promote glucose uptake in liver cells **Rawi et al., (2011)**. Another study showed that guava leaves administration could reduce the complication associated with diabetes such as the impairment in hepatic and renal functions **Radwan et al., (2018)**. On the other hand, chamomile tea is known as antidiabetic herbal tea used in traditional medicine, and it can prevent the progress of hyperglycemia and diabetic complications **Kato et al., (2008)**. They indicated that the suppressive effect of chamomile on blood glucose level might be depended on the inhibition of hepatic glycoprotein (GP). Another study revealed that ethanolic extract of chamomile participated in a significant antihyperglycemic effect and protected β -cells in streptozotocin diabetic rats **Cemek et al., (2008)**. Aqueous extract of chamomile could produce decreased serum glucose levels in streptozotocin-induced diabetic rats **Eddouks et al., (2005)**. Also, a significant decrease was observed in fasting blood sugar and 2-h postprandial glucose of Type 2 diabetic patients who consumed chamomile infusion (**Kaseb et al., 2018**). So, they recommended the daily consumption of chamomile flowers tea to overcome diabetic complications.

Table (1): Effect of CFP, GLP and their Mix on liver functions of hepatic rats.

Parameters Groups	GPT (U/L)		GOT (U/L)		ALP (U/L)		Serum albumin (g/dl)		Total protein (g/dl)	
	Mean ±SD	%of change	Mean ±SD	% of Change	Mean ±SD	% of change	Mean ±SD	%of change	Mean ±SD	% of change
Control (-)	16.0 ^f ±0.10	-36.00	42.0 ^g ±0.15	- 57.14	112.0 ^f ±0.16	- 36	6.00 ^a ±0.23	67.59	7.84 ^a ±0.20	61.31
Control (+)	25.0 ^a ±0.13	-	98.0 ^a ±0.11	-	175.0 ^a ±0.10	-	3.58 ^d ±0.20	-	4.86 ^c ±0.20	-
2% CFP	19.0 ^d ±0.11 ^e	- 24.00	48.0 ^f ±0.14	-51.02	130.0 ^d ±0.15	-25.71	4.88 ^b ±0.13	36.31	7.08 ^a ±0.14	45.67
4% CFP	17.0 ^e ±0.12 ^f	-32.00	40.0 ^g ±0.10	-59.18	124.0 ^e ±0.12	-29.14	5.84 ^a ±0.11	63.12	7.56 ^a ±0.12	55.55
2% GLP	22.1 ^b ±0.16 ^c	-11.60	63.0 ^b ±0.11	-36.45	149.0 ^b ±0.12	-14.85	4.16 ^c ±0.30	16.20	6.64 ^b ±0.16	36.62
4% GLP	20.5 ^c ±0.14 ^d	-18.00	60.0 ^c ±0.16	-38.77	136.0 ^d ±0.10	-22.28	3.96 ^c ±0.25	10.61	6.20 ^b ±0.20	27.57
2% Mix	20.0 ^c ±0.12 ^b	-20.00	58.0 ^d ±0.12	40.81	143.0 ^c ±0.13	-18.28	5.00 ^b ±0.13	39.66	7.61 ^a ±0.16	56.58
4% Mix	17.0 ^e ±0.11 ^c	-32.00	50.0 ^e ±0.13	-48.97	128.0 ^d ±0.14	-26.85	5.81 ^a ±0.14	62.29	6.73 ^b ±0.13	38.47
LSD (P ≤ 0.05)	0.750		1.851		3.502		0.540		0.822	

Each value represents mean ± standard deviation.

Mean under the same column bearing different superscript letters are different significantly at P≤ 0.05.

Table (2): Effect of chamomile flowers and guava leaves and their mixtures as powder on kidney functions of hepatic rats.

Parameters Groups	Urea (mg/dl)		Uric acid (mg/dl)		Creatinine (mg/dl)	
	Mean±SD	%of change	Mean±SD	%of change	Mean±SD	%of change
Control (-)	23.00 ^e ± 0.16	-55.33	1.54 ^b ±0.23	-57.10	1.14 ^c ±0.21	-65.97
Control (+)	51.50 ^a ± 0.10	----	3.59 ^a ±0.11	----	3.35 ^a ±0.15	----
2% CFP	47.50 ^b ± 0.20	-7.76	3.11 ^a ±0.21	-13.37	2.38 ^b ±0.22	-28.95
4% CFP	45.50 ^b ± 0.20	-11.65	3.07 ^a ±0.15	-14.48	2.34 ^b ±0.30	-30.14
2% GLP	44.00 ^b ± 0.13	-14.56	2.64 ^a ±0.14	- 26.46	2.30 ^b ±0.12	-31.34
4% GLP	39.50 ^c ± 0.25	-23.30	2.45 ^b ±0.12	-31.75	2.20 ^b ±0.10	-34.32
2% Mix	32.00 ^d ± 0.24	-37.86	2.15 ^b ±0.12	-40.11	1.45 ^c ±0.12	-56.71
4% Mix	26.00 ^e ± 0.13	49.51	1.88 ^b ±0.20	-47.63	1.36 ^c ±0.12	-59.40
LSD (P ≤ 0.05)	3.022		1.131		0.445	

Each value represents mean ± standard deviation.

Mean under the same column bearing different superscript letters are different significantly at P≤ 0.05.

Table (3): Effect of CFP, GLP and their Mix on total cholesterol and triglyceride of hepatic rats.

Parameters	Total cholesterol (mg/dl)		Triglycerides (mg/dl)	
	Mean±SD	%of change	Mean±SD	%of change
Control (-)	105.00 ^b ±0.20	-43.24	95.00 ^g ±0.20	-40.62
Control (+)	185.00 ^a ±0.30	----	160.00 ^a ±0.31	-----
2% CFP	154.50 ^b ±0.50	-16.75	130.00 ^b ±0.40	-18.75
4% CFP	146.50 ^c ±0.22	-21.08	116.00 ^d ±0.11	-27.50
2% GLP	130.00 ^c ±0.13	-29.72	125.00 ^c ±0.10	-21.87
4% GLP	125.00 ^f ±0.10	-32.43	100.00 ^f ±0.23	-37.50
2% Mix	139.50 ^d ±0.10	-24.59	110.00 ^e ±0.42	-31.25
4% Mix	117.00 ^e ±0.40	-36.75	99.00 ^f ±0.50	-38.125
LSD (P ≤ 0.05)	4.622		3.351	

Each value represents mean ± standard deviation.

Mean under the same column bearing different superscript letters are different significantly at P ≤ 0.05.

Table (4): Effect of CFP, GLP and their Mix on lipid profile of hepatic rats.

Parameters	HDL-c (mg/dl)		LDL-c (mg/dl)		VLDL-c (mg/dl)	
	Mean±SD	%of change	Mean±SD	%of change	Mean±SD	%of change
Control (-)	51.00 ^a ± 0.20	61.90	35.00 ^g ±0.10	-71.19	19.00 ^d ±0.12	-40.625
Control (+)	31.50 ^e ± 0.13	----	121.50 ^a ±0.20	---	32.00 ^a ±0.10	-----
2% CFP	38.50 ^d ± 0.22	22.22	90.00 ^b ±0.23	-25.92	26.00 ^b ±0.15	-18.75
4% CFP	40.00 ^d ± 0.10	26.98	83.30 ^c ±0.22	-31.44	23.20 ^c ±0.30	-27.50
2% GLP	40.50 ^d ± 0.13	28.57	64.50 ^e ±0.40	-46.91	25.00 ^b ±0.40	-21.875
4% GLP	43.50 ^c ± 0.40	38.09	61.50 ^e ±0.10	-49.38	20.00 ^d ±0.11	-37.50
2% Mix	42.00 ^e ± 0.15	33.33	75.50 ^d ±0.12	-37.86	22.00 ^c ±0.10	-31.25
4% Mix	47.00 ^b ± 0.14	49.20	50.20 ^f ±0.30	-58.68	19.80 ^d ±0.20	-38.12
LSD (P ≤ 0.05)	3.141		3.250		2.012	

Each value represents mean ± standard deviation.

Mean under the same column bearing different superscript letters are different significantly at P ≤ 0.05.

Table (5): Effect of CFP, GLP and their Mix on glucose level of hepatic rats.

Parameters	Glucose level (mg/dl)	
	Mean±SD	% of change
Control (-)	90.50 ^f ± 0.30	-58.90
Control (+)	219.00 ^a ± 0.10	-
2% CFP	152.00 ^b ± 0.20	- 30.59
4% CFP	119.00 ^c ± 0.40	- 45.66
2% GLP	147.00 ^c ± 0.42	- 32.87
4% GLP	117.00 ^c ± 0.53	- 46.57
2% Mix	128.00 ^d ± 0.40	- 41.55
4% Mix	101.00 ^f ± 0.60	- 53.88
LSD (P ≤ 0.05)	3.840	

Each value represents mean ± standard deviation.

Mean under the same column bearing different superscript letters are different significantly at P ≤ 0.05.

CONCLUSION:

In conclusion, CFP and GLP have a therapeutic effect against toxicity induced by CCL4. This effect might be due the high content of antioxidants that could improve damage and changes in liver.

Furthermore, they have a remarkable effect on the impaired renal functions, lipid profiles and serum glucose level. Based on the obtained results combination of CFP and GLP are recommended to be included in our daily diet, drinks, and food supplementation.

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التأثيرات العلاجية المحتملة لمسحوق أوراق الجوافة وأزهار البابونج ضد سمية الكبد المستحثة في فئران التجارب بواسطة رابع كلوريد الكربون

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نبذه:

صممت هذه التجربة لدراسة التأثيرات العلاجية المحتملة لمسحوق اوراق الجوافة، أزهار البابونج ومخلوطهم بتركيزات مختلفة ضد سمية الكبد المستحثة في الفئران بواسطة رابع كلوريد الكربون حيث أجريت الدراسة باستخدام اربعون فأراً من ذكور فئران الألبينو والتي تزن (10 ± 150) جرام تم تقسيمهم الى مجموعتين اساسيتين ، المجموعة الأولى (ن = 5) تغذت على الغذاء الأساسي كمجموعة ضابطة سالبة ، المجموعة الأساسية الثانية(ن = 35) تم حقنها باستخدام رابع كلوريد الكربون لاحداث السمية الكبدية . وقسمت الفئران المصابة الى سبع مجموعات كالأتي : المجموعة الثانية : تغذت على الغذاء الأساسي ، المجموعة الثالثة والرابعة تم تغذيتهم على (2،4%) من مسحوق أزهار البابونج بالترتيب . المجموعة الخامسة والسادسة تم تغذيتهم على (2،4%) من مسحوق أوراق الجوافة بالترتيب . المجموعة السابعة والثامنة تم تغذيتهم على (2،4%) من مخلوط مسحوق أوراق الجوافة وأزهار البابونج بالترتيب و أستمرت التجربة لمدة 28 يوم .. وسجلت افضل النتائج للمجموعة الثامنة (4% مخلوط)حيث ادت الى انخفاض معنوي بنسبة 32، 48،97، في انزيمات الكبد (ALT& AST) بالترتيب ونسبة 49،51، 47،63، 59،40، في اليوريا وحمض البوليك والكرياتين على التوالي . لذا اوصت هذه الدراسة بضرورة مزج مسحوق اوراق الجوافة وازهار البابونج للحصول على نتائج أكثر فاعلية في علاج سمية الكبد المستحثة في فئران التجارب بواسطة رابع كلوريد الكربون.

الكلمات الافتتاحية: الألبيومين؛ وظائف الكبد؛ الأوراق؛ أمراض الكبد.