



## THE EFFECT OF AL-JOURI ROSE FLOWERS EXTRACT ON GASTRIC ULCERS IN RATS

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### Abstract

peptic ulcer disease (PUD) is known as an inflammation or excavations in the mucous membrane and tissues of the intestinal tract. Al-Jouri rose (*damascene Rosa*) is an ornamental plant and beside perfuming effect, several pharmacological properties including antioxidant and Anti-inflammatory. The present study was conducted to investigate the effects of al-Jouri rose on stomach ulcers in experimental rats. thirty-five male albino rats were divided into five groups: group I and group II were kept as negative and positive control rats (Indomethacin-treated rats), respectively, and were fed on the normal basal diet. While the other remaining three groups treated with three levels of *damascene Rosa* (15%, 20% and 30%) and were fed on the normal basal diet respectively for 4 weeks. At the end of the experimental period, antioxidant enzymes, liver function and kidney function were determined for all studied groups. Results revealed that Indomethacin-treated rats and fed on different levels of *damascene Rosa* had significantly decreased ( $p < 0.05$ ) in serum levels of (AST, ALT, ALP, Urea, Creatinine, Uric acid, SOD, GSH and CAT). While, there was a significant increase in level of MDA as compared to Indomethacin-treated rats (positive control group). In addition, pathological examination of the stomach tissues that oral treatment with *damascene Rosa* at three levels showed significant reduction of gastric ulcer area. Finally, the obtained results proved that *Rosa damascene* improve of deterioration resulting from gastric ulcer disease.

**Key words :** *gastric ulcer, Al-Jouri rose, damascene Rosa and Rats*

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### INTRODUCTION

Gastric ulcer is one of the most widespread diseases in the world and occurs with stress, nonsteroidal anti-inflammatory drugs, Helicobacter pylori infection, and alcohol ingestion (Ogawa et al., 2011). This disease is the most common gastrointestinal disorder affecting 40% of developed countries and 80% of developing countries due to indiscriminate use of non-steroidal anti-inflammatory drugs (NSAIDs) and Helicobacter pylori infections (Ajeigbe et al., 2014).

Ulceration occurs when there is an imbalance between aggressive (acid-pepsin secretions) and protective factors such as mucus secretion, mucosal barrier, cell regeneration, blood flow, and prostaglandins (Lima et al., 2006). Most of the drugs used for the treatment of gastric ulcers, show numerous adverse effects (Wolfe and Sachs, 2000). In the search for new drugs, metabolites derived from plants used in traditional medicine provided an alternative source of therapeutic drugs (Sanchez et al., 2011).

Plant extracts containing a wide variety of antioxidants such as phenolic and flavonoid compounds, are some of the most attractive sources of new drugs and have been shown to produce promising results in the treatment of gastric ulcers (Hiruma et al., 2001). Damascus rose, *Rosa damascena*, belongs to the genus *Rosa*, which contains 200 species and more than 18,000 varieties. It is a hybrid species between *Rosa gallica* and *Rosa phoenicia*. It is referred to as the "queen of roses" and it is popular as a decorative plant (Mahboubi 2016 and et al 2012). It is called Damascus rose because it originated from Damascus in the Middle East and was introduced into Europe (Gudin, 2000 and Babaei et al., 2007).

Damascus rose is exploited for the attainment of several products, e.g., dried flower buds and essential oil. The latter is one of the most costly essential oils in the world due to its unique combination of odorant constituents and its low yield, which does not exceed 0.049% (Mahboubi, 2016 and Kaul et al., 2009). Rose water is used

mainly in cosmetic industry in various blonde and facial cleansing creams ( **Naquvi et al .,2014** ). It is also used in food and flavoring industries ( **Himesh S, et al 2012 and Kaul K, et al 2009** ). In addition to flavoring and perfuming uses, Rosa damascena is used in the treatment of constipation and digestive disorders, liver diseases, and abdominal pain ( **Akram, et al 2020** ).

The pharmacological properties of Rasa damascena have been proved and reported, reporting that it has antioxidant, antifungal, antibacterial, antimicrobial, and anti-inflammatory effects ( **Boskabady,et al 2011 . Preedy,2015 and Cheng, et al 2016** ). Interesting antioxidant and antibacterial properties of extracts from Rasa damascena flowers been reported in several studies ( **Ramdan, et al 2021and Özkan, et al 2004 and Nayebi, et al 2017** ).

### Materials & Methods:

#### Materials

**Rats:** Adult male albino rats of Sprague Dawley strain weighing  $180\pm 5$ g were purchased from the Laboratory Animal Colony, Ministry of Health and Population, Helwan, Egypt.

**Diet:** Basal diet constituents were obtained from El Gomhorya Company, Cairo, Egypt.

**Al-Jouri rose:** *damascene Rosa* Dried were obtained from Al-Haraz Store, Al-Azhar, Egypt.

**Chemicals and Kits:** Indomethacin (INDO) was obtained as from Kahir Pharmaceuticals and Chemical Industries Co. (Cairo, Egypt). Sildenafil was

purchased from Pfizer (Cairo, Egypt), ethanol and Kits for biochemical analysis was purchased from (Sigma Company, Cairo, Egypt).

#### Methods

**Preparation extract of al-Jouri rose:** The extract was prepared in ethanol at a concentration of 10% (w/v) by immersing 250 g of dried plant powder in 2.5 L of ethanol in a water bath at 70 °C for 6 hours and then filtered.

**Preparation of basal diet:** The basal diet (AIN-93M) were formulated to meet the recommended nutrients levels for rats according to ( **Reeves et al., 1993** ).

#### Induction of Ulcer

Gastric ulceration was induced in the animals according to the procedure described by Sayanti et al. ( **Sayanti et al., 2007** ). Briefly, rats were administered with a single oral dose of indomethacin (30 mg/kg body weight). They were deprived of food but had free access to water 24 h prior to ulcer induction. Various degrees of ulceration have manifested 4 h after indomethacin administration.

**Experimental Design:** This experimental included thirty-five adult male albino rats of Sprague Dawley strain weighing ( $180 \pm 5$  g), All rats have

been housed at a room temperature of  $25 \pm 2$  °C, relative humidity of 50–55% and 12 hr. light/12 hr. dark cycles in the animal house one week for acclimatization. After the acclimatization period (one week), all animals have been randomly divided into four equal groups (n=10 rats of each) as follows:

**Group I:** Normal control rats (negative control group) fed on the basal diet only

**Group II:** Indomethacin-treated rats (positive control group) fed on the basal diet

**Groups III:** Indomethacin-treated rats, fed on basal diet and given orally *damascene Rosa* extract with 15%

**Groups IV:** Indomethacin-treated rats, fed on basal diet and given orally *damascene Rosa* extract 20%

**Groups V:** Indomethacin-treated rats, fed on basal diet and given orally *damascene Rosa* extract 30%

At the last day of experimental period (29 days), all rats were starved of food but not of water for 12 hours according to Indomethacin -induced gastric ulcer protocols.

#### Gastric ulcer index

The method described by ( **Agrawal et al., 2000** ) was employed in the present study. In briefly, after 4 hours of administrated ethanol, all rats were sacrificed after using an overdose of Indomethacin and their stomachs removed and washed by saline. The gastric juice was collected in test tube. Then stomachs opened along the greater curvature, washed with saline and examined under dissecting microscope for gastric ulcers. The sum of length for all lesions area for each animal was measured and served as the ulcer index. The curative ratio was calculated for each group using following equation:

$$\text{Curative ratio (CR)} = (\text{LC-LT/LC}) \times 100$$

LC: The length of gastric ulcer in positive group.

LT: The length of gastric ulcer in treated group.

#### Determination of feed intake, body weight gain and feed efficiency ratio:

Food intake (FI) was calculated every day. Body weight gain and feed efficiency ratio (FER) at the end of the experimental period (2 weeks) were determined using the following formulas:

$$\text{Body weight gain (g)} = \text{Final body weight (g)} - \text{Initial body weight (g)}$$

$$\text{Feed efficiency ratio (FER)} = \frac{\text{Body weight gain (g)}}{\text{Food consumed (g)}}$$

At the end of experimental period, rats were fasted for 12 hours then sacrificed. Blood samples were collected from the portal vein into dry clean centrifuge tubes. Serum were separated by centrifuge at 3000 r.p.m for 15 min and serum aliquots were stored at  $-20^{\circ}\text{C}$  until biochemical analysis.

**Blood sampling:**

At the end of the experimental period animals from each group were sacrificed and the blood was collected in a clean dry centrifuge tube, left at room temperature until the clot is formed, completely retracted and then centrifuged to separate serum by centrifugation at 4000 R.P.M., for 10minutes at room temperature followed by keeping in plastic vial (well stoppered) until analysis.

**Measurement the length of gastric ulcer:**

At the last day of experimental period, all rats were fasted for 12-14hrs and only allowed for drinking water. In the morning of the next day, all rats were sacrificed and their stomachs were tied around both openings (cardiac & pyloric sphincters) and injected with 3ml distilled water. The gastric juice was then collected in sterilized tube. The stomachs were opened longitudinally, washed with saline and examined under dissecting microscope for ulcer. The length of gastric ulcer was measured and expressed as mean+ standard deviation for each group. The curative ratio was then calculated for each treated group according to the method described by (Akhtar and Ahmad 1995).

**Measurement the volume of gastric juice:**

Gastric juice was collected in tubes and centrifuged at 500 R.P.M., for 5minutes. The volume of gastric juice was measured by graduated cylinder and expressed as ml.

**Determination the total acidity and pH of gastric juice:**

Total acidity was determined by titration of 1ml gastric juice in 10ml of distilled water with 0.01N NaOH using two drops of phenolphthalein as an indicator. Data were expressed as percentage. The pH degree was determined by pH meter.

**Histopathological Examination:**

Specimens from stomachs were collected from rats of all experimental groups at the end of the experimental period, fixed in 10% neutral buffered formalin (pH=7.0), dehydrated in ethyl alcohol, then cleared in xylol and embedded in paraffin; 4-6 microns thickness, sections prepared and stained with haematoxylin and eosin for examining both fore and glandular parts of the stomach (Carleton, 1976).

**Statistical Analysis:**

The obtained data were statistically analyzed using computerized SPSS (Statistic Program Sigmatat, statistical soft-ware, SAS Institute, Cary, NC). Effects of different treatments were analyzed by

one way ANOVA (Analysis of variance) test using Duncan's multiple range test and  $p < 0.05$  was used to indicate significance between different groups (Snedecor and Cochran, 1980).

**Results**

The effect of *damascene Rosa* on the length of gastric ulcer (mm), volume of gastric juice and PH in rats were recorded in Table(1). (1) The obtained results showed that the positive control group had significant increased ( $P < 0.05$ ) in the main value of gastric ulcer ( $2.44 \pm 0.29$  mm) as compared to the negative control group in the main value ( $0.00 \pm 0.00$ ) moreover (Indomethacin-treated rats), were fed on basal diet and given orally *damascene Rosa* extract at all levels had significant decreased ( $P < 0.05$ ) in the main values of gastric ulcer ( $2.20 \pm 0.52$  mm- $1.52 \pm 0.20$  mm and  $0.64 \pm 0.22$  mm) respectively as compared to the positive control group (Untreated rats).

Regarding to volume of gastric juice the positive control group had significant increase ( $P < 0.05$ ) in the mean value of volume of gastric juice ( $2.36 \pm 0.25$  m) as compared to the negative control group in the mean value ( $1.38 \pm 0.13$  m) moreover (Indomethacin-treated rats), were fed on basal diet and given orally *damascene Rosa* extract at all levels had significant decreased ( $P < 0.05$ ) the mean values of gastric juice ( $2.18 \pm 0.08$  m - $2.02 \pm 0.11$  m and  $1.72 \pm 0.19$  m) respectively as compared to the positive control group (Untreated rats).

Regarding to pH of gastric juice in the positive control group had significant increased ( $P < 0.05$ ) in the mean value ( $2.40 \pm 0.42$ ) as compared to the negative control group in the mean value ( $5.70 \pm 0.27$ ). on the other hand (Indomethacin-treated rats), were fed on basal diet and given orally *damascene Rosa* extract at all levels caused significant retraction ( $P < 0.05$ ) in the mean values of pH ( $3.30 \pm 0.27$  - $3.80 \pm 0.27$  and  $4.50 \pm 0.35$ ) respectively as compared to the positive control group (Untreated rats).

antiulcer Effect of oral administration of *damascene Rosa* at different levels on curative ratio in Indomethacin-treated rats was showed in table (1). The mean value of curative ratio of Indomethacin-treated rats were fed on basal diet and given orally *damascene Rosa* extract at all levels had higher mean values of curative ratio (9.84%, 37.70% and 73.77% respectively) as compared to Positive control group (Untreated rats).

**Table (1)** The effect of *damascene Rosa* on the length of gastric ulcer (mm), volume of juice , PH and Curative Ratio in rats.

Parameters		Gastric Ulcer (mm)	Gastric Juice (m)	PH	Curative Ratio %
<b>Negative control group</b>		0.00± 0.00 <sup>d</sup>	1.38 ± 0.13 <sup>d</sup>	5.70 ± 0.27 <sup>a</sup>	-
<b>Positive control group</b>		2.44 ± 0.29 <sup>a</sup>	2.36 ± 0.25 <sup>a</sup>	2.40 ± 0.42 <sup>c</sup>	0
Treated Groups with <b>Indom (30 mg/kg b. wt ) + Rosa damascene RDE at levels of</b>	<b>15%</b>	2.20 ± 0.52 <sup>a</sup>	2.18 ± 0.08 <sup>a,b</sup>	3.30 ± 0.27 <sup>d</sup>	9.84
	<b>20%</b>	1.52 ± 0.20 <sup>b</sup>	2.02 ± 0.11 <sup>b</sup>	3.80 ± 0.27 <sup>c</sup>	37.70
	<b>30%</b>	0.64 ± 0.22 <sup>c</sup>	1.72 ± 0.19 <sup>c</sup>	4.50 ± 0.35 <sup>b</sup>	73.77

THE effect of *damascene Rosa* on serum Aspartate Aminotransferase (AST), Alanine Aminotransferase (ALT) and alkaline phosphatase (ALP) in rats with stomach ulcer. Were recorded in table(2) The obtained results showed that the positive control group was significant increased ( $P < 0.05$ ) in the main value of AST ( $38.00 \pm 1.58$  U/l) as compared to the negative control group in the main value ( $17.80 \pm 1.92$  U/l) moreover (Indomethacin-treated rats) , were fed on basal diet and given orally *damascene Rosa* extract had significant decreased ( $P < 0.05$ ) in the main value of AST ( $32.00 \pm 1.58$  U/l - $27.00 \pm 1.58$  U/l and  $22.60 \pm 1.14$  U/l ) respectively as compared to the positive control group (Untreated rats). Regarding to the serum levels of ALT was significant increase ( $P < 0.05$ ) in the positive control group in the mean value( $47.20 \pm 1.92$  U/l) as compared to the negative control group ( $26.00 \pm$

1.58, ) moreover (Indomethacin-treated rats) , were fed on basal diet and given orally *damascene Rosa* extract had significant decreased ( $P < 0.05$ ) ( $42.00 \pm 1.58$  U/l - $37.00 \pm 1.58$  U/l and  $32.00 \pm 1.58$  U/l ) respectively as compared to the positive control group. (Untreated rats) Regarding to the serum levels of ALP were significant increased ( $P < 0.05$ ) in the positive control group in the mean value( $695.00 \pm 11.18$  U/l) as compared to the negative control group in the mean value ( $594.20 \pm 3.77$  U/l) moreover(Indomethacin-treated rats) , were fed on basal diet and given orally *damascene Rosa* extract had significant decreased ( $P < 0.05$ ) in the serum levels of ALP in the blood serum( $22.60 \pm 1.14$  U/l - $32.00 \pm 1.58$ U/l and  $615.00 \pm 4.12$  U/l) respectively as compared to the positive control group. (Untreated rats)

**Table (1):** Effect of *damascene Rosa* on serum Aminotransferase (AST), Alanine

Parameters		AST	ALT	ALP
<b>Negative rats</b>		17.80 ± 1.92 <sup>c</sup>	26.00 ± 1.58 <sup>c</sup>	594.20 ± 3.77 <sup>c</sup>
<b>Positive rats</b>		38.00 ± 1.58 <sup>a</sup>	47.20 ± 1.92 <sup>a</sup>	695.00 ± 11.18 <sup>a</sup>
Treated Groups with <b>Indom (30 mg/kg b. wt ) + Rosa damascene RDE at levels of</b>	<b>15%</b>	32.00 ± 1.58 <sup>b</sup>	42.00 ± 1.58 <sup>b</sup>	660.80 ± 7.46 <sup>b</sup>
	<b>20%</b>	27.00 ± 1.58 <sup>c</sup>	37.00 ± 1.58 <sup>c</sup>	639.60 ± 7.30 <sup>c</sup>
	<b>25%</b>	22.60 ± 1.14 <sup>d</sup>	32.00 ± 1.58 <sup>d</sup>	615.00 ± 4.12 <sup>d</sup>

Aminotransferase (ALT) and alkaline phosphatase (ALP) in rats with stomach ulcers.

\*Result are expressed as mean ±SD

\*Values at the same column with different letters are significantly at ( $P < 0.05$ )\*Aspartate Aminotransferase (AST), Alanine Aminotransferase (ALT) and alkaline phosphatase (ALP) in rats with stomach

THE Effect of *damascene Rosa* on Catalase , Malondialdehyde (MDA), Reduced Glutathione (GSH), Superoxide Dismutase (SOD), in rats with stomach ulcers. Were recorded in table(3) The

obtained results showed that the serum levels of Catalase was significant decreased ( $P < 0.05$ ) of the positive control group in the mean value ( $42.20 \pm 1.92$  U/l) as compared to the negative control group in the mean value ( $136.00 \pm 1.58$  U/l) . moreover (Indomethacin-treated rats) , were fed on basal diet and given orally *damascene Rosa* extract had significant increased ( $P < 0.05$ ) in the serum levels of Catalase in the blood serum ( $114.80 \pm 1.92$  U/l -  $122.80 \pm 1.92$  U/l and  $126.00 \pm 1.58$

U/l ) respectively as compared to the positive control group. (Untreated rats)

Regarding to the serum levels of MDA was significant increase ( $P < 0.05$ ) in the positive control group in the mean value( $119.80 \pm 3.11$  U/l) as compared to the negative control group ( $93.60 \pm 1.14$  U/l) moreover (Indomethacin-treated rats ) , were fed on basal diet and given orally *damascene Rosa* extract had significant decreased ( $P < 0.05$ ) in the serum levels of MDA in the blood serum( $113.00 \pm 1.58$  U/l -  $108.00 \pm 1.58$  U/l and  $102.80 \pm 1.92$  U/l) respectively as compared to the positive control group. (Untreated rats)

Regarding to the serum levels of GSH was significant decrease ( $P < 0.05$ ) in the positive control group in the mean value( $1.73 \pm 0.016$  U/l) as compared to the negative control group ( $2.03 \pm 0.02$  U/l ) moreover (Indomethacin-treated rats ) ,

were fed on basal diet and given orally *damascene Rosa* extract had significant increased ( $P < 0.05$ ) in the serum levels of GSH in the blood serum( $1.78 \pm 0.016$  U/l -  $1.83 \pm 0.016$  U/l and  $1.87 \pm 0.016$  U/l ) respectively as compared to the positive control group. (Untreated rats)

Regarding to the serum levels of SOD was significant decrease ( $P < 0.05$ ) in the positive control group in the mean value( $430.00 \pm 15.81$  U/l) as compared to the negative control group( $737.00 \pm 12.04$  U/l) moreover (Indomethacin-treated rats ) , were fed on basal diet and given orally *damascene Rosa* extract had significant increased ( $P < 0.05$ ) in the serum levels of SOD in the blood serum( $480.00 \pm 15.81$  U/l - $530.00 \pm 15.81$  U/l and  $580.00 \pm 15.81$  U/l ) respectively as compared to the positive control group. (Untreated rats)

Table (3): Effect of *damascene Rosa* on Catalase , Malondialdehyde (MDA), Reduced Glutathione (GSH), Superoxide Dismutase (SOD), in rats with stomach ulcers.

Parameters		Catalase	MDA	GSH	SOD
Group					
Negative rats		$136.00 \pm 1.5$ a	$93.60 \pm 1.14$ e	$2.03 \pm 0.02$ a	$737.00 \pm 12.0$ a
Positive rats		$42.20 \pm 1.92$ e	$119.80 \pm 3.11$ a	$1.73 \pm 0.01$ e	$430.00 \pm 15.8$ e
Treated Groups with Indom (30 mg/kg b. wt ) + Rosa damascene RDE at levels of	15%	$114.80 \pm 1.9$ d	$113.00 \pm 1.58$ b	$1.78 \pm 0.01$ d	$480.00 \pm 15.8$ d
	20%	$122.80 \pm 1.9$ c	$108.00 \pm 1.58$ c	$1.83 \pm 0.01$ c	$530.00 \pm 15.81$ c
	25%	$126.00 \pm 1.58$ b	$102.80 \pm 1.92$ d	$1.87 \pm 0.01$ b	$580.00 \pm 15.8$ b

\*Result are expressed as mean  $\pm$ SD

\*Values at the same column with different letters are significantly at ( $P < 0.05$ )

\*Malondialdehyde (MDA), Reduced Glutathione (GSH), Superoxide Dismutase (SOD)

## 6-Discussion

The aim of the present study was to the effects of al-Jouri rose on stomach ulcers in experimental rats. Our finding showed that *damascene Rosa* aqueous extracts at the different tested levels (15%,20%and 30%) had gastroprotective effects on acute experimental gastric ulcer in rats. Antiulcer effect of *damascene Rosa* aqueous extracts at levels(20%and 30%) were higher than that of antiulcer effect of *damascene Rosa* Aqueous extract at level(15%). *damascene Rosa* at levels(30 %) had much more favorable antiulcer effect. In The present study the Indomethacin-treated rats were fed on basal diet and given orally *damascene Rosa* extract at all levels had significant reduction in length of gastric ulcer (mm), volume of juice and PH in rats. The results showed that Indomethacin-treated rats, were fed on basal diet and given orally *damascene Rosa* extract at the different tested level

(15%, 20% and 30% ) improved Curative Ratio effects on acute experimental gastric ulcer in rats.

The obtained result was in agreement with (Bech et al., 2000) who founded indomethacin, caused a significant increase in ulcer index, gastric juice acidity. The ulceration induced by indomethacin is conducted by various processes, including generation of reactive oxygen species, initiation of lipid peroxidation, infiltration of leukocytes, induction of apoptosis and inhibition of prostaglandin synthesis. Decreased prostaglandin level destroys almost all aspects of gastro protection and increases acid secretions which, in turn, aggravate the ulcer. Inhibitory action of indomethacin on prostaglandin synthesis coupled with free radicals formation has been opined as critical biochemical events in the pathogenesis of gastric ulceration( Inas et al ., 2011 ) .Cells or tissues are in a stable state if the rates of free radical formation and scavenging capacity are

essentially constant and in equilibrium. However, an imbalance between them results in oxidative stress which further deregulates cellular functions leading to different pathological conditions ( **Sabiu et al., 2011** )

As mentioned in the study of **Safaviet al., 2016** some bioactive compounds from medicinal plants with anti-H. pylori activity mentioned in various literature include carvacrol, polyphenoliccatechins, tannins, cinnamaldehyde, eugenol, quercetin, licoricidin, licoisoflavone B, Berberine, sanguinarine, chelerythrine protopine,  $\beta$ -hydrastine, mastic and plumbaginprotocatechuic acid.

**Suzuki et al., 1998** showed flavonoid quercetin present in the leaves is a well-known antiulcer agent). Further, the leaves contain rutin, a flavonoid that has a gastric cytoprotective effect (**Casa et al., 2000**).

Moreover, the leaves of the plant contain steroids such as bsitosterol and b- carotene, and both of these are known to reduce the development of gastric ulcers (**Xiao et al., 1992**). In the present study, we observed various macro- scopic changes in the gastric mucosa. Normal white gastric mucosal with a reduction in ulcer index were observed in both the control group and indomethacin-treated rats who also received quercetin. Contrarily, severe redness of the mucosa with brown haemorrhagic patches and a very high ulcer index were observed in those rats treated with indomethacin alone.

These findings are similar to previous reports (**Villegas et al., 2004**) in which the redness was attributed to vasodilatation and congestion of blood vessels, and the brown colorations were due to the effect of HCl on the haemorrhagic lesions.

Flavonoids are a group of naturally occurring compounds that are widely distributed as secondary metabolites in the plant kingdom. Quercetin, a flavonoid, prevents oxidant injury and cell death using several mechanisms, such as scavenging oxygen radicals (**Abrahamse et al., 2005** ). The Quercetin's anti-inflammatory activity appears to be due to its antioxidant and inhibitory effects on inflammation-producing enzymes (cyclooxygenase, lipoxigenase) and the subsequent inhibition of inflammatory mediators, including leukotrienes and prostaglandins (**Kim et al., 1998** ). Inhibition of histamine release by mast cells and basophiles also contribute to quercetin's anti-inflammatory activity (**Kelly et al., 2011** ).

The present study showed the Indomethacin-treated rats significant elevated in serum liver enzymes AST, ALT and ALP, while Indomethacin- treated rats fed on basal diet and given orally *damascene Rosa* extract decreased in serum liver enzymes AST, ALT and ALP. Since the high effectiveness of liver enzymes (AST, ALT) in the blood is the best indicator of liver damage, their high levels in the blood can be used

to predict inflammatory changes in the liver (**singh and sharma ,2011**) hepatic enzymes AST and ALT are the most specific intracellular enzymes that are associated with cell leakage and serve as a marker of hepatocellure injury with greater grades of hepatic steatosis and fibrosis in several studies .

The obtained results was in agreement with (**Akram et al., 2020** ) who founded that treated peptic ulcer rats with the demascas rose at the different levels had significant increase in the serum activities of AST, ALT and ALP enzymes as compared to that untreated peptic ulcer rats . **Reham et al., 2022** was founded R. damascena extracts decreased in serum activity of ALT and AST. In contrast, the supplementation of R. damascena extracts after exposure resulted in a significant decrease in ALT and AST hepatic enzymes and alleviated hepatic toxicity.

The present study provides a perfect correlation between serum lipid peroxidation product as indicator by MDA and activities of some antioxidant enzymes which pay an important in the antioxidant system . It showed that the Indomethacin- treated rats were fed on basal diet and given orally *damascene Rosa* extract have a significant increase in serum activities GSH,CAT and SOD enzymes decreased in MDA, compared to positive control group. The obtained result was in agreement with (**Bafna et al., 2005**) who founded that fed rats on *damascene Rosa* have a significant increase in serum level of MAD and decrease in serum activities of GSH and SOD enzymes , compared to that fed rats on normal basal diet .

As previous study the prooxidative effects have been documented as it decreases the activity of antioxidant enzymes such as SOD, CAT and GSH and increased the concentration of malondialdehyed (MDA), which is the marker of lipid peroxidation (**Capatina et al., 2020**) MAD is the product of oxidative degradation , and it reflects the level of lipid peroxidation .CAT, GSH act as free radical scavengers to decompose (**Qin et al., 2019**).

Our results was agreement with ( **J. Gonz et al., 2007** ) By increasing the endogenous antioxidant defenses, flavonoids can modulate the redox state of organisms. The major endogenous antioxidant systems include superoxide dismutase (SOD), catalase (CAT) which is essential for the detoxification of lipid peroxides.

In covenant with **Mansouri et al., 2015** the results showed , the increased concentration of MDA as well as reduced activity of SOD in the stomach of indomethacin-ulcerated rats is a manifestation of facilitated lipid peroxidation and over production of free radicals resulting in mucosal damage. Several lines of evidences have indicated the inducing effect of phenolic compounds on endogenous antioxidant factors.

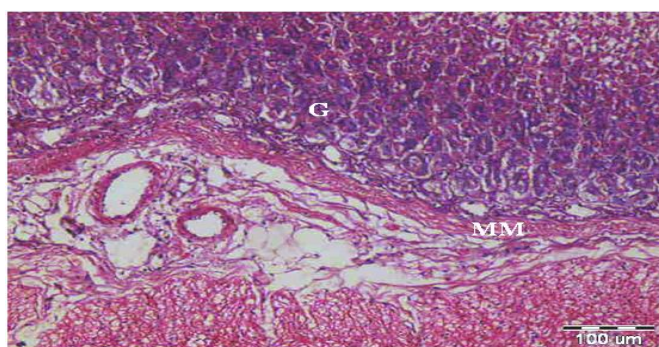
**Histopathological results and discussion**

Microscopically, stomachs of rats the indomethacin-treated rats showed necrosis of gastric mucosa associated with congestion of submucosal bloodvessels, submucosal edema and hemorrhage (**Figure1**) negative control rats showed normal histology of the gastric mucosa. (**Figure 2**) Examined stomachs of rats treated with oral damascus Rose extract at of 15% of b.wt found improve histology of the gastric mucosa(**Figure 3**). histopathological results showed that rats treated with of damascus Rose extract at a oral of 20%of b.wt showed submucosal leucocytic cells infiltration (**Figure 4**). Examined sections from treated groups with damascus Rose extract at oral of 30%ofb.wt revealed no histopathological changes as showed in (**Figure 5**). The obtained result was in agreement with (**Bech et al., 2000**)

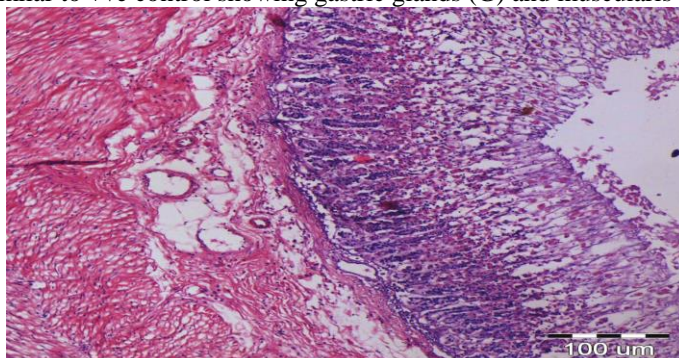
who founded indomethacin, caused a significant increase in ulcer index, gastric juice acidity. As mentioned in the study of **Safaviet al., 2016** some bioactive compounds from medicinal plants with anti-H. pylori activity mentioned in various literature include quercetin, bsitosterol and b-carotene.

**Suzuki et al., 1998** showed flavonoid quercetin present in the leaves is a well-known antiulcer agent). Further, the leaves contain rutin, a flavonoid that has a gastric cytoprotective effect (**Casa et al., 2000**).

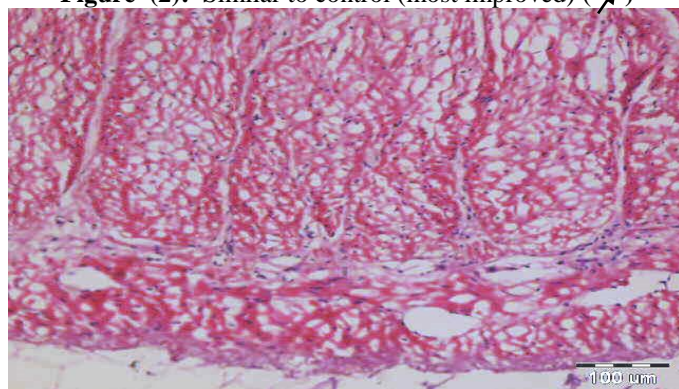
Moreover, the leaves of the plant contain steroids such as bsitosterol and b- carotene, and both of these are known to reduce the development of gastric ulcers (**Xiao et al., 1992**). In the present study,



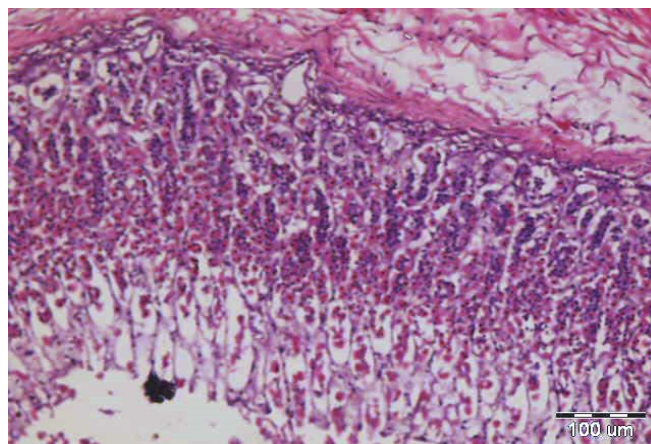
**Figure(1):** Similar to +ve control showing gastric glands (G) and muscularis mucosa (MM).



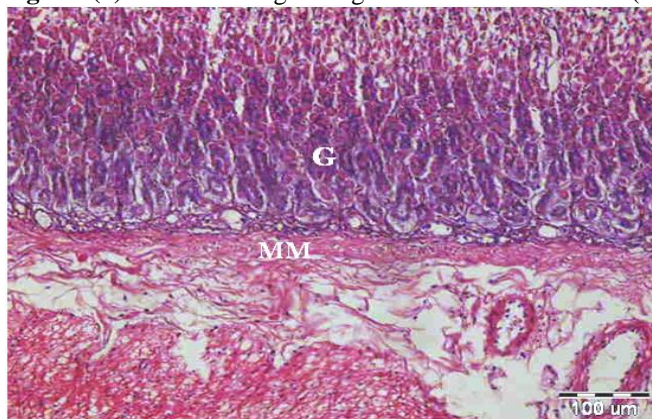
**Figure (2):** Similar to control (most improved) (↗)



**Figure (3):** Most of the glands lost their secretion (lucent areas) (↘)



**Figure (4):** Some of the gastric glands lost their secretion (↗)



**Figure (5):** The gastric mucosa is formed of the gastric glands (G) and muscularis mucosa (MM).

### Conclusion

In conclusion, the results showed that Al-Jouri rose Flowers extract has a good effect against gastric ulcers rats. Al-Jouri rose treatment has a curative activity against gastric ulcers side effect. The present study recommends that intake of Ginkgo biloba leaves be beneficial of gastric ulcers. This research provides a foundation for future researches to discover effective therapeutic strategies for the treatment of nephropathy caused by gastric ulcers.

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### Conflict of Interest:

The authors declare that they have no competing interest.

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