

Effectiveness of date seeds extract ,vitamin E and selenium on hematological parameters and morphometric of ovary in albino rabbits

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Abstract—The research done to estimate the effectiveness of date pits extract , vitamin e and selenium on hematological parameters and anatomical changes on ovary of albino rabbits. The experiment was done in veterinary medicine university of kerbala in animal house in special cages in two months from 4/1/2025 to 4/3/2025 .Twenty(20) albino rabbits weighing between 1200 and 1500 kg and the ages of 2.5 and 3 months were split up into four groups. The first group used as control group received no treatment while (G2) received treatment with seed extract (12%), followed by vitamin E (100 mg/kg body weight) and selenium (0.3 mg/kg body weight) in the third group, and a combination of seed extract (12%) and vitamin E (100 mg/kg body weight) and selenium (0.3 mg/kg body weight) in the fourth group. Five milliliters of blood are drawn straight from the heart at the end of the experiment, and the weight and size of the ovary following ovariectomy are also recorded.

The results findings, selenium, vitamin E, and date seed extract all improve blood parameters, and when taken together, they have a stronger cumulative effect.

Numerous studies have demonstrated that date seeds are high in antioxidants that increase the production of blood cells, and that vitamin E and selenium are known for their functions in preventing blood cell oxidation and enhancing immune system function. The significant increase in G4 confirms a synergistic effect between the extract and nutrients (vitamin E and selenium), which promote reproductive health and stimulate ovarian growth.

In conc lusion the extract has a strong beneficial effect on its own, vitamin E and selenium greatly increase its potency. The hypothesis that these substances can be used as supplements to improve fertility and blood health was supported by the clear demonstration of the positive effect in blood and reproductive parameters.

Keywords —date extract ,vitamin E ,Selenium and morphmetric of ovary .

INTRODUCTION

The most significant waste product of the date industry is thought to be date seeds, which are valuable economic resources that can also have negative environmental effects if they accumulate significantly in the environment (1). Date seeds are higher in phenolic compounds, flavonoids, antioxidants, and dietary fibers than the flesh portion, according to recent studies. Protocatechuic acid is present in amounts, along with high levels of α -tocopherol, ascorbic acid, glutathione, and polyphenol compounds like caffeic acid and sinapic acid (2). Additionally, date seeds are categorized as multi-aromatic, which means that they contain saturated and unsaturated hydrocarbons, alcohols, citrates, aldehydes, and ketones (3).

Alpha-tocopherol, also known as vitamin E (VE), is a naturally occurring antioxidant nutrient that is crucial to animal health because it deactivates dangerous free radicals that are created by both normal cellular activity and a variety of stressors. This micronutrient's antioxidant properties may help to improve immunity by preserving the structural and functional integrity of critical immune cells (4). Selenium, a trace mineral that shields our cells from the damaging effects of rancidity, is widely acknowledged to be extremely important for human health. It reverses chromosome damage and cancer and strengthens our defenses against bacterial and viral infections (5). The primary role of vitamin E during lipid peroxidation is that of a chain-breaking antioxidant (6). The degree to which dietary selenium deficiency affects various tissues varies depending on the species. The three most prevalent signs of selenium deficiency in rats are liver necrosis, thyroid gland necrosis, and multiple organ necrosis, according to the literature (7). A combination of vitamin E and selenium deficiency causes muscular dystrophy and liver necrosis in rabbits. As a result, the role of vitamin E in preventing the aforementioned illnesses cannot be disputed, while the role of selenium remains unclear (8).

MATERIALS AND METHODS

- Experimental Animals and Grouping

A total of twenty 20 healthy adult female albino rabbits (weighing 1.2–1.5 kg and aged 4–5 months) were used in this

study. The animals were housed with free access to Use Billets as animal feed. Tap water used in drinking. They were acclimatized for two weeks prior to the experiment

The rabbits were randomly divided into four equal groups (n = 5 each) as follows:

- Group 1 (Control): Received no treatment (control group).
- Group 2 (Date Pit Extract): Administered 12% aqueous date pit extract orally.
- Group 3 (Vitamin E + Selenium): Administered Vitamin E (100 mg/kg body weight) and Selenium (0.1 mg/kg body weight) orally.
- Group 4 (Combined Treatment): Administered both 12% aqueous date pit extract and Vitamin E + Selenium at the same doses as above.
- The appropriate dose is 1.5 ml to 3 ml per rabbit per day, depending on the purpose of the study and the duration of treatment.

Immunizations and preventive examinations.

All animals were examined to ensure that they were free of injuries and deformities before the experiment started. The animals were dosed prophylactically with an internal, hepatic, and intestinal antihelmintic drug Albendazol 3% and Ivermectin 0.1 ml / rabbit were injected under the skin to prevent internal and external worms. And they were injected with Amprolium at a dose of 0.6 ml / liter of drinking water for 4 days To prevent coccidiosis.

Blood tests.

Five ml of blood was drawn from all the experimental animals direct from the heart at the end of the experiment. Tubes containing anticoagulant were used blood parameters.

Complete blood count (CBC).

A blood sample was taken and placed in the urit-2900 device, and the measurement was done automatically.

Measurement of ovary size and weight :

Use of vernier to measure the length ,width and height of ovary the calculate size by multiple the length ,width and height.

Measurement of ovary weight :

Use of electric balance to measure ovary weight

Statically analysis

Less significant differences (LSD) were used to evaluate significant differences between the group means, and Excel one-way ANOVA was used to measure the experiment's data statistically. Mean \pm standard error was used to express the results, and $P < 0.05$ was deemed statistically significant.

RESULT & DISCUSSION

In comparison to the control group (G1), demonstrate the significant effects of seed extract (G2), vitamin E andm (G3), and a combination of seed extract, vitamin E, and selenium (G4) on hemoglobin concentration, packed cell volume percentage, white blood cell count, and red blood cell count.

Table 1.Effectiveness of date pits extract and vitamin e and selenium on hematological Parameters .

Groups Parameters	Mean \pm SE			
	RBCs (10^6 /cell)	WBCs (10^3 /cell)	PCV%	Hb dl/ml
G1 (control)	4.76 ± 0.21 B	3.08 ± 0.34 C	33.08 ± 0.35 B	10.58 ± 0.32 B
G2 (extract)	6.494 ± 0.18 A	5.5 ± 1.20 B	36.2 ± 0.66 A	11.54 ± 0.16 A
G3(vit E and selenium)	5.91 ± 0.42 A	5.68 ± 0.48 A	35.98 ± 1.00 A	11.96 ± 0.22 A
G4(extract + vit E and selenium)	6.9 ± 0.11 A	8.24 ± 0.61 A	38.62 ± 0.9 A	12.44 ± 0.37 A
LSD	1.099	3.135	3.271	1.205

Different capital letters denote a significant differences between groups ($P \leq 0.05$)

Show there is significant effect of seed extract(G2) , vitamin E and selenium(G3) and mix of seed extract , vitamin E and selenium(G4) on ovary size and weight compared with control group(G1).

Table (2) Effectiveness of date pits extract and vitamin e and selenium on ovary size and weight .

Groups Parameters	Mean \pm SE	
	Ovary Size	Ovary Weight
G1 (control)	56.21 ± 1.5 C	0.13 ± 0.007 C
G2 (extract)	102.684 ± 5.08 B	0.28 ± 0.009 B
G3(vit E and selenium)	132.622 6.13 B	0.31 ± 0.04 B
G4(extract + vit E and selenium)	348.64 ± 17.79 A	0.72 ± 0.05 A
LSD	41.47	0.14

Different capital letters denote a significant differences between groups ($P \leq 0.05$)

These results indicate that both date seed extract, vitamin E, and selenium have a positive effect on blood parameters, and that their combination leads to an enhanced cumulative effect. This is consistent with numerous studies that have shown that date seeds are rich in antioxidants that boost blood cell production, while vitamin E and selenium are known for their roles in protecting blood cells from oxidation and improving immune system performance.

A high hemoglobin concentration indicates an above-normal level of the oxygen-carrying protein hemoglobin, which is the main component of red blood cells (9). A high hemoglobin concentration is somewhat different from a high red blood cell count because different cells may contain different amounts of hemoglobin proteins. Thus, a high hemoglobin count may

occur even if your red blood cell count is within the normal range (10). See the daily dosage of 1 g/kg of date extract for twos, which showed a significant increase in the number of red blood cells, white blood cells, hemoglobin concentration, hematocrit, and platelets. Due to their high levels of dietary fiber, bioactive compounds, and (11) these seeds are advantageous for both industry and health.

Their potential goes beyond animal feed to include human consumption and a variety of high-value products, which helps the agricultural industry grow economically (12). Date seeds improve general health by providing dietary fiber, proteins, and vital minerals (13). They have high concentrations of antioxidants, flavonoids, and phenolic compounds, which can reduce the risk of chronic illnesses (12). Supplementing with vitamin E produced notable hematopoiesis increases. These enhancements in hematological parameters could improve the capacity of blood to delivering oxygen to various tissues, which enhances varying physiological and metabolic processes (14). Peritoneal injections of vitamin E for successive days resulted in a significant increase of leukocytes, mostly consisting of macrophages, in the peritoneal cavity(Polymorphonuclear leukocytes (PMN) of selenium and vitamin E-injected animal, killed phagocytized bacteria better than did PMN(15). (16) observed that injection of vitamin E and selenium to animal resulted in higher blood WBC counts and a greater phagocytosis index, but the RBC count, haemoglobin concentration and PCV .

The notable rise in G4 indicates that the extract and nutrients (selenium and vitamin E) work in concert to support ovarian growth and reproductive health. This is in line with research showing that Vitamin E and selenium promote hormonal function and guard against damage to reproductive cells, while date seeds contain phytoestrogens and flavonoids that increase fertility.. The effects of DWE administration are identical to those of results (17), which show that dietary quercetin treatment of female mice's offspring promotes follicle maturation at the expense of decreasing the quantity of follicles in the primary and primordial stages. One food-based flavonoid is quercetin, which has a high affinity for type I ER and has several estrogenic effects, including cell proliferation (18). Follicle maturation is depressed when antioxidants and reduced oxidative stress are out of balance; therefore, antioxidant supplements are necessary to maintain equilibrium. This state of equilibrium promotes follicular growth and maturation while preventing cell damage (19).

CONCLUSION

The extract alone has a significant positive effect, but its effectiveness is significantly enhanced when combined with vitamin E and selenium. The positive effect was clearly demonstrated in blood and reproductive parameters, supporting the hypothesis that these substances can be used as supplements to enhance fertility and blood health.

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