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# The Protective Role of Date Seeds Extract on the Reproductive System of Male Chickens Exposed to Gamma Radiation

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## ABSTRACT

The purpose of this investigation is to determine how gamma radiation-induced oxidative stress impacts the reproductive system of adult chickens. In this study, we used 39-57 weeks old cocks' chickens to assess the significance of semen volume10-3liter per bird per ejaculation). Sperm count overall (108 cells per ejaculation) and count per milliliter (108 cells). The volume, concentration data, and sum sperm data of cock chickens all increased significantly with age, though not at all ages; rather, just at a select few ages that were considered to be the control (regulate) group. These data were found after 35 days of gamma radiation at soft dose rates (soft intensity) of at100, 120 and 130cm between cages of chickens and radioactive source with 0.402, 0.279 and 0.237 Gy/h respectively. This is a six-hour daily chronic dose rate (extended duration of radiation). As the soft dosage rate was gradually increased, a significant decline in the values was observed.

The semen volume data drop ratio was calculated for each male chicken generation and compared to the control group using three chronic moderate doses of irradiation at doses ranging from around 4.8 to 13.6 percent and semen concentrations from roughly 4.9 to 14 percent. The average results from both groups showed that when the intensity of the gamma ray radiation increased, all metrics significantly declined. Using date seeds extract(*Phoenix dactylifera L.*) as a defense against oxidative stresses brought on by radiation exposure and to lower its percentage data, especially on particular sperm data qualities

Due to its availability in the Middle East, the use of date seeds extracts(*Phoenix dactylifera L.*) in this study proved beneficial in terms of both economic return and fertility-boosting effects on chickens, as evidenced by the positive results obtained when compared to other antioxidants under the same conditions.

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## INTRODUCTION

Due to the effect it has on the chick version, fertility is a hot concern in the broiler industry. In flocks that are generally matted, the relationship between fertility and development is inverse. (Chambers,1990) selecting multiples for growth or development from a selection of options.

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Generations can be produced by males' aggressive mating propensities or reduced fertility (Brillard,2004). On the other hand, the collection of agreements ought to be planned to bring about features, particularly to taint reproductive stress (Muir and Aggrey,2003).

In terms of poultry fertility, male or female is traditionally regarded as a freelancing trait, and male and female drive rooting supports egg fertilization and embryo development whether genetically or non-genetically (Brillard,2003). The genotyping task of the embryo that receives the initial egg donor also includes fertility. Additionally, maternal and paternal goals should be contrasted when calculating fertility. The characteristics of type sperm quality, such as sperm motility, concentration of semen, sperm metabolism, and the percentage of aberrant or abnormal sperm cells, are factors that affect male fertility (Wilson *et al.,* 1979).

Manner traits are always regarded to be less heritable, even while data on sperm quality traits are thought to be similarly heritable (Ansah *et al.,*1985). Since their discovery, some experiments have tried to separate the genetic neutral of cytoplasmic male sterility in tl1c. The genetic make-up of CMS as a whole has not yet been discovered, although some problems have been treated (Siegel,1965; Christov,1999). Despite having its origins in northeastern Mexico and southeastern America, date seeds extract is an oleaginous crop that has long been a favorite in Europe, especially in ancient Russia (Torretta *et al*.,2010; Bye *et al.,* 2009).

The majority of research is on the impact of microwave radiation. Hazard waves are other mild radiation doses that have an impact on the reproductive system. Studies show that date seeds extract, an antioxidant with a high content of vitamin C, plays a critical role in preventing the formation of free radicals (Bye *et al.,* 2009).

The fruit of date palm *(Phoenix dactylifera L.)* has been one of the important crops in the arid and semi-arid regions of the world (Minikaev *et al.,* 2021). It has always played a vital role in the economic and social life of the inhabitants of the oases

Date palm (DP) may be considered a complementary or alternative source of nutraceuticals for the prevention and treatment of chronic illnesses. medications. The fruit of the DP tree, Phoenix dactylifera L. (P. dactylifera), contains significant levels of vitamins, minerals, and energy in addition to highly absorbable and digestible carbohydrates that aid in quick replenishment of the body, particularly during a fast. Due to the presence of bioactive components, the various sections of the DP tree, such as the fluffy pericarp, seeds (also known as pits, pips, kernels, and stones), leaves, stems, and pollen grains, have varying health benefits. Polyphenols, selenoproteins, carotenoids, tocopherols, sterols, essential oils, and other substances are examples of such bioactive components. Folk medicine claims to provide health benefits that include regulating immunity, treating wounds, edema, and bronchitis, as well as preventing cancer (Barreveld, 1993; Puri *et al*., 2000). Consequently, frequent fruit consumption may provide defense against infectious infections, gastrointestinal issues, and chronic illnesses. The DP seeds that make up

As will be detailed later, 6–12% of the entire date fruit was also reported to provide many health benefits (Barreveld, 1993). Consequently, frequent fruit consumption may provide defense against infectious, including immunological modulation, spermatotoxicity recovery, antioxidant effect, and renoprotective activity.

Various DP types are grown in the Arab world, North Africa, and various Gulf countries (Besbes *et al*., 2004; Allaith *et al*., 2008) where they constitute a staple crop and an important source of nutrients. Tunisia is home to the DP varieties Deglet Nour, Allig, and Khalti in North Africa.

Egypt has Zaghlool, El-Barhy, Aisha, and Samani; Libya is home to the bekraray variety. Saudi Arabia cultivates Ajwa, Berni, Halaoua, Nebtat Ali, Sogaai, and Sukkari among other plants found in the Gulf region. The United Arab Emirates is home to Khalas, Lulu, Shikat alkahalas, Sokkery, Bomaan, Sagay, Shishi, Maghool, and other people. Different date palm kinds can also be found in areas other than Arab countries.

It is anticipated that the various types will have varying concentrations of bioactive components and, as a result, distinct health benefits. Date palms are an important plant for humans, but research on them in humans and animals has only just started to take notice (Hussain *et al*., 2020; Younas *et al.*, 2020). Dates have been shown in several research to have positive impacts on fish species' development, immunology, and antioxidant characteristics [Esteban *et al*.,2014; Guardiola *et al*.,2016; Hoseinifar *et al*., 2017; Hoseinifar *et al*., 2015).

The reason for this is that date palms can be employed as nutraceuticals and functional foods. Studies that are now available demonstrate that γ-ray radiation can intensify the physiological and biochemical effects of the plant's bioactive compounds (Ahuja et al., 2014; Rezanejad *et al*., 2019). More precisely, dates have also been discovered to be irradiated with γ-rays could be an effective replacement for chemicals and fumigation, stopping the production of aflatoxin and enhancing sensory quality (Ashraf and Hamidi-Esfahani,2011; Zarbakhsh and Rastegar, 2019).

The purpose of this study was to compare the beneficial cases of these male chicken substances to non-beneficial cases to determine how soft-dose gamma rays affected specific physiological conditions of sperm over time, such as size and concentration, as well as to count the total number of them and use protective materials, like date seeds extract*(Phoenix dactylifera L.)*, to reduce oxidative stress caused by exposure.

## MATERIALS AND METHODS

It is understood how this affects the physiological alterations that might take place in the semen and its features, which go back to the sperm's capacity to finish forming naturally in the absence of genetic mutation or gene expression variations, is affected by the fact that the chickens' food was not irradiated in this study but their entire body was. Date seeds extract*(Phoenix dactylifera L.)* was procured from neighborhood markets in the city of Mosul in Iraq and timed and filtered to eliminate any impurities. Using machinery that destroyed the date, the oil was recovered from 52 g of dates that had a height of approximately 252 $cm^3$. In an ice bath, a shattering instrument was used to concentrate the ethanol (97%). In ideal circumstances and at room temperature, shaking the mixture for an hour with an electric generator. To filter and centrifuge the filter, several layers of filter sheet were utilized and 1000 rpm of stirring was applied to the mixture for 25 minutes. The date seeds extract*(Phoenix dactylifera L.)* must be removed from the topmost layers of the surface as the last stage. Every week, the local market was used to choose the native hens between the ages of 39 and 57. A total of 40 healthy natives. Ten Thai male chickens were split into four groups at random. The chickens were housed in cages for 15 hours each day, where they had unrestricted access to food, water, and light. Semen was only twice a week collected from each group utilizing an abdominal method. The average combined semen volume of each group was determined using the mean data of the two between week ejaculations, and age data was used to determine the average bridge per ejaculation semen size data. The semen concentration data was multiplied by the average semen data and ejaculation volume data to determine the total number of sperm and ejaculations (SO *et al*., 2008).

### *Semen color*

The amount of ejaculate is usually determined by the shade of the sperm. Semen from domestic chickens can range in consistency from a thick, opaque material to a fluid substance that is secreted by several reproductive glands. By decreasing sperm data, its levels from a comparatively high sperm density data, or translucent marks with creamy white. of bird used controlled the color of the sperm, although it had to be creamy to signify a higher sperm concentration (Getachew ,2016). The limousine can be found with amazing vigor if there are blood clots in the selection or refer to procedure. To reduce sperm loss, non-calculated urine is mixed with sperm sample data that have been treated with antibiotics such as neomycin. Administering antibiotics as a semen diluent data increases fertility (Getachew *et al.,* 2023).

*Ejaculate size*

The average fixed ejaculate volume in male chickens is 0.62 ml, ranging from 0.11 to 1.52 ml per ejaculation (Getachew ,2016). The amount and timing of sperm production varies among various cockerels within the same species (Wilmot,2007). According to studies (Bols *et al.,* 2010; Bah *et al*., 2001). The average amount of ejaculation produced with the abdominal massage technique is approximately 0.215 ml, and the average volume of semen is 0.27 ml.

According to (Chambers ,1990), it was found that the fixed volume of semen data level was $10^{-3}$ liter. Semen volume data and sperm concentration data determine the number of sperm collected or ejaculated. Lowering pollination dose counts will be easier to achieve as a result (Senger, 1997).

*Work system*

Radium-226, which has a gamma constant of 394 x $10^{-4}$ R. $cm^2$ per mCi. hour and radiation energy and intensity of 1 Ci with steady exposure, was obtained from the University of Mosul College of Science's Department of Physics. These sources' radiation causes alpha particles to move a few millimeters over their grid, and they have a half-life of 1.6x$10^3$ years (AL-Dulamey et al., 2001). Age, sex, cell type and size, radiation frequency and intensity, exposure time, and source geometry are just a few of the factors that might affect how gamma rays affect a person. The alpha force particle $^{226}$Ra has an energy of 0.186 MeV in gamma rays, and its half-life is 1.6x$10^3$ years .The distance in various vertical directions, around 100, 120, and 140 cm, between the radioactive source and the cage housing the male chickens was measured, as shown in Figure 1 with 0. 402, 0.279, and 0.237 Gy/h. The $^{226}$ Ra also releases alpha particles and is covered with sheet paper.

Considering the 45 years of radioactive decay that transpired from the radioactive source's generation till this research was done, the activity is computed as following:

$A=A_o\, e^{-\lambda t}$ (1) (Al-Dulamey *et al.,* 2020).

$A_o$=1Ci, decay constant $\lambda= 0.693/t_{1/2}$ (2)

After 45 years the specific activity can be computed as,

A= 1 Ci x {e – (0.693/1600) year-1 x 45 year }

A = 0.980 Ci. The radioactive source put at 100,120 and 130 cm from cages of chickens the exposure dose rate compute as following:

$D(R/h)= \Gamma \times A / d^2$ (3) (Al-Dulamey *et al.,* 2020).

$D1(R/h)= \Gamma \times A / d^2$ = 39.4 x 0.980/ 100x100= 0.0038612 R/h

1R= 0.0096 Gy then,

D1= (0.0038612)/(0.0096) Gy/h= 0. 402 Gy/h

$D2(R/h)= \Gamma \times A / d^2$ = 39.4 x 0.980/ 120x120= 0.00268 R/h

D2= (0.00268/0.0096) Gy/h = 0.279 Gy/h

$D3(R/h)= \Gamma \times A / d^2$ = 39.4 x 0.980/ 130x130= 0.002284 R/h

D3= (0.002284/0.0096) Gy/h = 0.237 Gy/h

*Design experimentation*

*1st experiment*

1. There are ten cocks of 39–57 weeks old in each group, and the control group was not exposed to radiation for the first 35 days.

2. The second group was exposed to a gamma-ray dose of 0.402 Gy/h for 35 days at a rate of 6 hours each day.

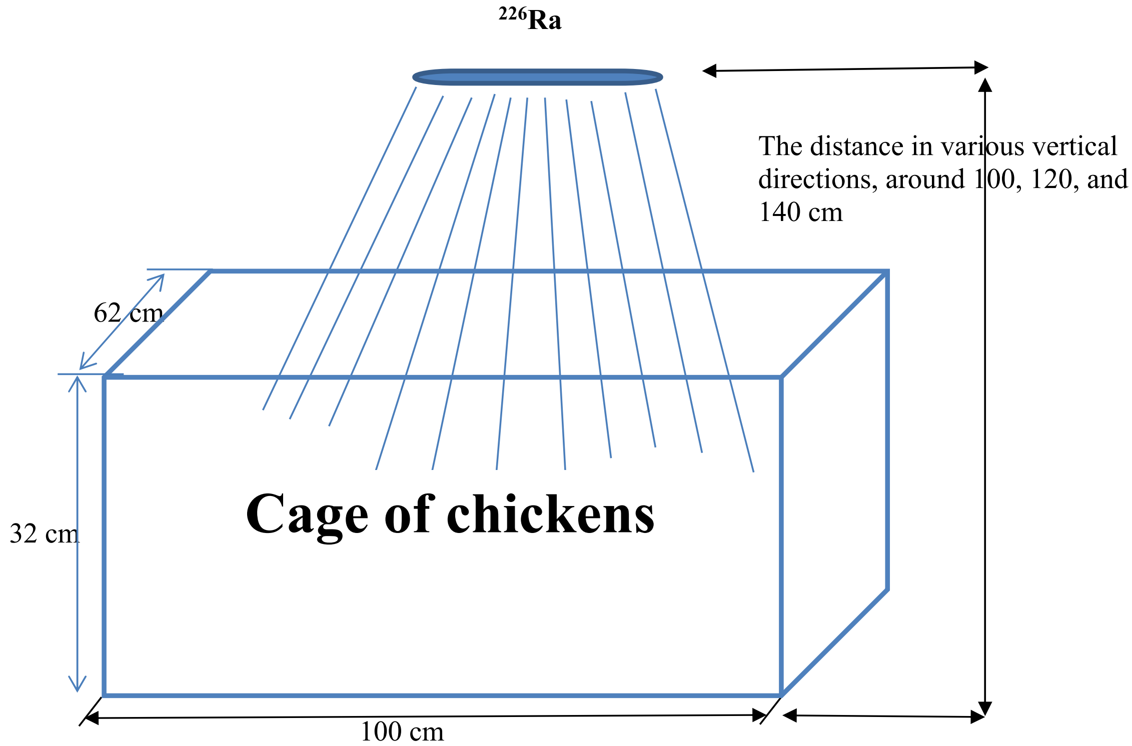



**Fig. 1.** Arrangement of experimental batch.

3- The third group was exposed to a soft gamma radiation dose of 0.279 Gy/h for 35 days at a rate of 6 hours per day.

4- The fourth group was exposed to a radiation dose of 0.237 Gy/h, for 35 days at a rate of six hours each day

*2nd experiment*

1- There are ten cocks of 39–57 weeks old in each group, and in the first group, they simply receive food and water for 35 days (the control group).

2. The second group was given 400 mg.kg$^{-1}$ of date seeds extract *(Phoenix dactylifera L.)* over six hours each day and for 35 days.

3- The third group, was exposed to gamma radiation for 35 days at a rate of 0.402 Gy for 6 hr each day.

4. the fourth group was given 400 mg.kg$^{-1}$ of date seeds extract *(Phoenix dactylifera L.)* and gamma radiation was exposed for 35 days at a rate of 0.402 Gy/h for six hours each day.

*Statistical analysis*

The mean and standard deviation of all data were displayed. One-way analysis of variance (ANOVA) was used in this investigation. Duncan involved calculating significant data at $p \leq 0.05$ (Al-Dulamey et al, 2020).

## RESULTS & DISCUSSION

*For the first experiment*

The current job's tables contain all of the results.

At a certain point in the statistical analysis software, all data are equivalent to (0.05) in terms of comparison and consequences of all kinds or none at all. There is a strong correlation between the variables we looked at and the data on sperm cell activity if there is no change at the control point 0.05 between data (which indicates no discernible variables).It is preferred to use male chickens instead of female chickens since female chickens' immunological activity, which includes egg production, directly impacts them, as well as their hormonal activity, which has a physical impact on the body. One counts the blood cells. Because of the reproductive system's high radiation susceptibility. It is more profoundly affected by ionizing radiation than any other human tissue, and the effects manifest quickly and easily. Many different kinds of free radicals are produced by ionizing radiation, which can change the expression of genes and harm or destroy sperm. This endangers the ability of these animals to reproduce, which has an effect on their productivity and quality and presents an economic problem.

*Experiment 2 yielded the following result*

The tables (2-4) showed the association between the dose rate and the semen properties, such as length, concentration, and sum sperm data, of all male chickens aged. The group control in a biological system is the one that has not experienced any gamma radiation (fixed state). When male chickens are exposed to exact doses—variable doses in each case—their normal physiological condition changes.

The first occasion, which happened earlier this year, was the first group was considered stable and non-dangerous because it was not exposed to ionizing radiation. The majority of the instances that were exposed to radiation in varied dosages were taken into account together with all other groups.

The distance in various vertical directions—roughly 100, 120, and 140 cm—between the animal cage and the radioactive source that emits gamma rays was measured. A plastic cage was used to let radiation move without being reacted to. It is impossible to compare chickens and mice because they are physiologically quite different from one another and birds and butterflies, respectively.

Table 1 lists the data for sum sperm data ($10^6$ cells per ejaculation), Sum sperm concentration data ($10^6$ cells/$10^{-3}$liter), and semen volume data (ml/bird/ ejaculation) in weeks with a significant rise in male chickens' era. The long-term, chronic exposure to low-dose gamma wave radiation for 35 days at 6 hours daily (0.402 ,0.279, and 0.237 Gy per h) was determined from tables (2, 3, and 4) and Figs (2 and 3). This was attributed to the increasing irradiation duration. When the irradiation dosage rate was increased, the data on semen volume, concentration, and sum of

**Table 1.** shows the semen concentration data for the male chickens aged 39-57 weeks through 35 days period without radiation (control).

| Cock's age (weeks ) | Volume of Semen mean data ±S.D (10-5 liter / bird / ejaculation) | Concentration of Semen mean data ±S.D ($10^8$ cells/ml.) | Sum sperm mean data ±S.D ($10^8$ cells/ ejaculation) |
|---|---|---|---|
| 39 | 37.7ac±0.020 | 70.155cd±0.44 | 25.9203bc± 0..34 |
| 41 | 32.9bc±0.020 | 69.137cd±0.40 | 26.9603bc±0.11 |
| 43 | 42.1a±0.044 | 77.0383bc±0.20 | 31.5815ab±0.212 |
| 45 | 42.1a±0.025 | 77.2462b±0.14 | 31.6667ab±0.25 |
| 47 | 41b±0.035 | 78.7792b±0.26 | 31.5076ab±0.35 |
| 49 | 41b±0.040 | 80.1324ab±0.14 | 32.0489 a±0.30 |
| 51 | 41b±0.070 | 80.6626ab±0.33 | 32.2609±a0.14 |
| 53 | 41b±0.031 | 81.268a±0.52 | 325028a±0.60 |
| 55 | 33c±0.035 | 82.139a±0.32 | 24.6384bc±0.61 |
| 57 | 31 cd±0.020 | 81.253a±0.11 | 23.5601cd±0.50 |

**Table 2.** shows the semen concentration data of male chickens exposed to gamma radiation at a dosage rate of 0.402 Gy/h for 35 days, six hours a day.

| Cock's age (weeks) | Volume of Semen mean data ±S.D ( 10-5 liter / bird / ejaculation) | Concentration of Semen mean data ±S.D ($10^8$ cells/ml.) | Sum sperm mean data ±S.D ($10^8$ cells/ ejaculation) |
|---|---|---|---|
| 39 | 37.5ac±0.020 | 70.109cd±0.40 | 25.5300bc± 0..30 |
| 41 | 37.2bc±0.012 | 65.6825bc±0.35 | 24.2788ab±0.10 |
| 43 | 39.12a±0.030 | 73.179ab±0.20 | 28.5459a±0.31 |
| 45 | 39.1a±0.010 | 77.3885 a ±0.40 | 30.1720a±0.31 |
| 47 | 38.23b±0.040 | 74.862ab±0.21 | 28.4623±0.21 |
| 49 | 38.22b±0.051 | 76.134 a ±0.31 | 28.9433a±0.10 |
| 51 | 38.20b±0.020 | 76.6275 a ±0.02 | 29.1346a±0.15 |
| 53 | 38.2b±0.067 | 77.1775a±0.40 | 29.3412a±0.51 |
| 55 | 28.3cd±0.041 | 78.0416a±0.41 | 21.8660b±0.52 |
| 57 | 27.1cd±0.052 | 77.198a±0.31 | 20.8680bc±0.30 |

**Table 3.** shows the semen concentration data of male chickens exposed to gamma radiation at a dosage rate 0.279 Gy per hour for 35 days, six hours a day.

| Cock's age (weeks) | Volume of Semen mean data ±S.D ( 10-5 liter / bird / ejaculation) | Concentration of Semen mean data ±S.D ($10^8$ cells/ml.) | Sum sperm mean data ±S.D ($10^8$ cells/ ejaculation) |
|---|---|---|---|
| 39 | 374ac±0.020 | 70.112cd±0.44 | 25.6273bc± 0..30 |
| 41 | 34.2bc±0.042 | 62.238d±0.40 | 21.1607b±0.43 |
| 43 | 36.2±a0.030 | 69.3507b±0.21 | 24.975ab±0.50 |
| 45 | 36.3b±0.60 | 69.547b±0.23 | 25.0325a±0.30 |
| 47 | 35.2b±0.31 | 70.894b±0.30 | 24.8194ab±0.41 |
| 49 | 35.5b±0.11 | 72.158ab±0.32 | 25.2478a±0,50 |
| 51 | 35.5b±0.10 | 72.565ab±0.32 | 25.4247a±0.51 |
| 53 | 35.5b±0.20 | 73.1413a±0.40 | 25.5859a±0.51 |
| 55 | 27.7cd±0.52 | 73.928a±0.55 | 19.9651cd±0.62 |
| 57 | 26.1cd±0.60 | 73.1378a±0.32 | 19.0206 cd±0.52 |

**Table 4.** shows the semen concentration data of male chickens exposed to gamma radiation for 35 days at a dosage rate of 0.237 Gy per hour, six hours a day.

| Cock's age (weeks) | Volume of Semen mean data ±S.D ( $10^{-5}$ liter / bird / ejaculation) | Concentration of Semen mean data ±S.D ($10^8$ cells/ml.) | Sum sperm mean data ±S.D ($10^8$ cells/ ejaculation) |
|---|---|---|---|
| 39 | 37.1ac±0.020 | 70.1334cd±0.40 | 25.8211bc± 0..30 |
| 41 | 34.15ab±0.040 | 60.7256de±0.42 | 20.6807bc±0.52 |
| 43 | 351a±0.51 | 67.7976cd±0.30 | 23.7321a±0.52 |
| 45 | 34.14ab±0.42 | 67.9924cd±0.50 | 23.1272a±0.60 |
| 47 | 345ab±0.53 | 69.3367c±0.51 | 23.576a±0.61 |
| 49 | 33.3b±0.62 | 70.5256ab±0.62 | 23.2868a±0.40 |
| 51 | 332b±0.43 | 70.982ab±0.50 | 234407a±0.42 |
| 53 | 32.2bc±0.70 | 71.5161a±0.61 | 22.8919ab±0.70 |
| 55 | 26.1c±0.60 | 72.2756a±0.63 | 18.7990cd±0.72 |
| 57 | 25.1c±0.61 | 71.4712a±0.40 | 17.8828cd±0.69 |

**Table 5.** shows the average statistics for semen concentration, Sum sperm, and semen for each group

| Groups | Average data of Volume of Semen mean data ± S.D ($10^{-5}$liter /bird/ ejaculation) x$10^{-2}$ | Average data of concentration of Semen mean data ± S.D ($10^{8}$ cells/ml.) | Average data of Sum sperm mean data ±S.D ($10^{8}$ cells/ ejaculation) | P-value |
|---|---|---|---|---|
| Group 1 (control) | 35.319a±0.11 | 77.78189a±0.60 | 31.692798a±0.20 | 0.002 |
| Group 2 (0.402 Gy/h) | 32.296b±.05 | 74.64456b±0.41 | 26.75321ab±0.89 | 0.055* |
| Group 3 (0.279 Gy/h) | 33.960bc±0.04 | 70.7114c±0.34 | 23.7152c±0.69 | 0.06* |
| Group 4 (0.237 Gy/h) | 32.489d±0.01 | 69.2776d±0.40 | 22.27.33375d±0.40 | 0.08* |

* Important ± S.D ** p=0.05 *** n=20 Count of animals in each group, ****T=80 Total number of animals used , ****** Significant state (p<0.05) is scale as a, b, c, d between groups ******* (Gy/h) = Gary per hour

sperm significantly fell and were compared slowly with the group in control (i.e., no irradiation) for every age group.

The dosage option for oral date extract(*Phoenix dactylifera L.)* 400 mg.kg$^{-1}$. wt because it agrees with previous studies on the amount of dose given to chickens, as for the amount and time of exposure to the radioactive source for 35 days at a rate of 6 hours per day, it is the inclusion of some studies that carried out exposure by gamma rays, including (Hasanpour et al,. 2018; Najam *et al.,* 2020).

The percentage of decreased semen concentration level to decreased semen size was around (4.9–14). Table (5) displayed the average value for each group as well as a p-value indicating a significant reduction in all components with increased rates of gamma waves exposure. In order to evaluate gamma ray and electron beam irradiation together with a toxin binding as an anti-aflatoxin B1 in chicken, the (Najam et al.,2020) study created an in vivo review of gamma ray and electron beam irradiation plus a variation's toxin binder.

The methodology used in this work is in line with that of (Molins,2001), which also utilizes the gamma ray soft effect.

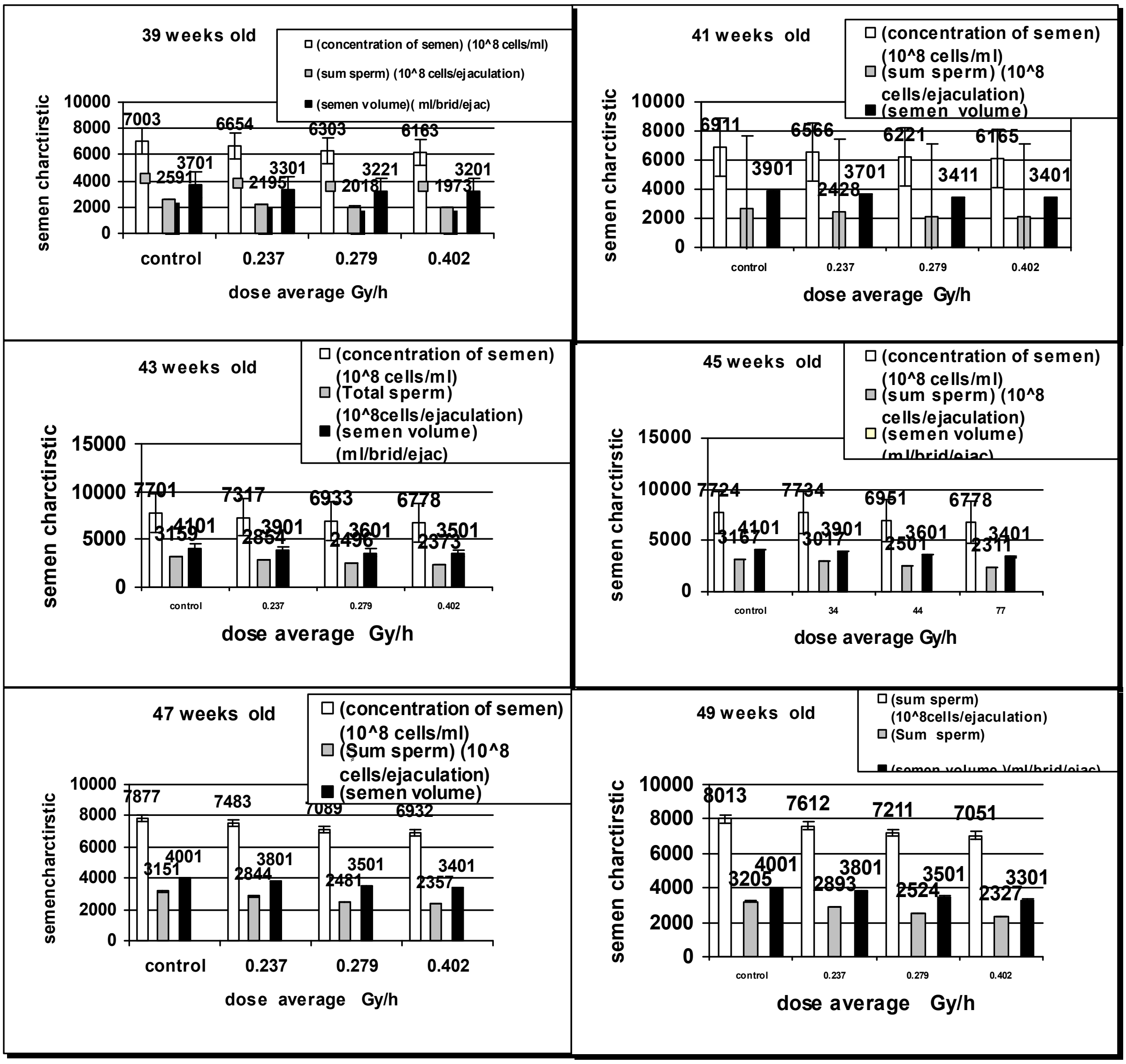
The Army approached the FDA in February 1963 to inquire about the viability of vacuum-packed, irradiated, and sterilized meat (0.0545 to 0.056 M Gy); natural meat conversion was the recommended method for this productivity after closely examining all submitted data on the effects on animals given irradiated food and the outcomes of multiple testing, the FDA withdrew its clearance of irradiation-packed bacon assizes the same year (Smith,1989). More rats that were fed a diet containing meat that had been irradiated at a dosage of 0.558 M Gy showed a lower percentage of surviving delivered young rats compared to non-irradiated diets, which is consistent with our research (Brillard,2004).

Furthermore, in order to encourage higher yields with noticeably larger diets, the FDA worked with military specialists (Cohen and Mason, 1976). Irradiated beef, pig, and poultry were fed to the animals (Baker and Chandler, 1975; Johnson and Metta, 1956). thiamine and niacin, two water-soluble vitamins, are affected by electromagnetic radiation at low temperatures. Meats are known to contain riboflavin (Josephson, 1983; Richardson *et al*., 1958; Gadelha et al., 2014). However, following concurrent therapy with 400 mg.kg$^{-1}$ of date seeds extract*(Phoenix dactylifera L.)* and gamma wave at a dose of 0.402 Gy per hour for 6 hours daily for 35 days, group 4's sperm parameters significantly decreased in comparison to group 4. Group 1 receives 30% of the vote and wins.

Furthermore, in 3 radiation exposure scenarios, group 3 and 4 values were lower than

**Table 6.** Effect date seeds extract on characteristics of semen data of male chickens

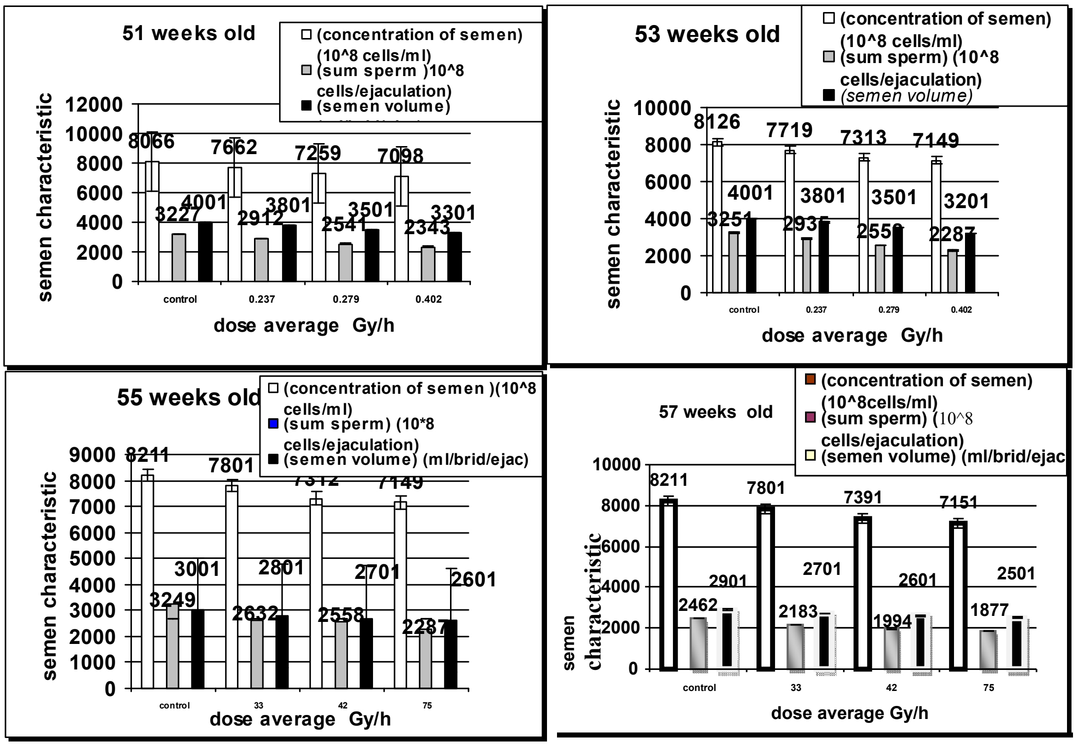
| Cock's age (weeks) | Parameters | Control group1 without irradiation X10$^{-2}$ | Group2 Administrate of date seeds extract 400 mg per kg. wt X10$^{-2}$ | Group3 Irradiated with gamma ray 0.402 Gy per h for 6 hour daily for 35 days X10$^{-2}$ | Group4 Administrate of date seeds extract 400 mg per kg. wt and irradiated with gamma ray0.402 Gy 6 hour daily for 35 daysX10$^{-2}$ |
|---|---|---|---|---|---|
| 39 | Volume of Semen mean data | 37.7ac±0.020 | 44.3a±0.030 | 22.3d±0.022 | 29.7c±0.025 |
| | Semen mean data Concentration | 70.1550cd±0.40 | 84.0700a±0.051 | 42.0430d±0.030 | 56.0560c±0.00 |
| | Sum sperm mean | 25.9203bc± 0..31 | 31.1144a± 0.41 | 15.5622d±0.28 | 20.7462c±0.32 |
| 41 | Volume of Semen mean data | 32.9bc±0.022 | 46.9a±0.036 | 23.3d±0.022 | 31.3c±0.026 |
| | Semen mean data Concentration | 69.1370cd±0.40 | 82.9649a±0.050 | 41.4884d±0.030 | 55.3133c±0.04 |
| | Sum sperm mean | 26.9603bc±0.11 | 32.3623a±0.40 | 16.1862d±0.28 | 21.5684.4c±0.32 |
| 43 | Volume of Semen mean data | 42.1a±0.042 | 49.3a±0.032 | 24.7d±0.020 | 32.8c±0.025 |
| | Semen mean data Concentration | 77.0383bc±0.20 | 92.4437a±0.062 | 46.22687d±0.031 | 61.6324c±0.04 |
| | Sum sperm mean | 31.5815ab±0.211 | 37.8879a±0.42 | 18.9588d±0.28 | 25.2753c±0.34 |
| 45 | Volume of Semen mean data | 42.1a±0.022 | 49.3a±0.035 | 24.7d±0.024 | 32.9c± 0.023 |
| | Semen mean data Concentration | 77.2462b±0.14 | 92.6932a±0.068 | 46.3617d±0.035 | 61.7988c±0.08 |
| | Sum sperm mean | 31.6667ab±0.23 | 38.0700a±0.44 | 19.2201d±0.28 | 25.3634.6c±0.32 |
| 47 | Volume of Semen mean data | 41.0b±0.030 | 48.01a±0.038 | 24.00d±0.026 | 33.0c±0.020 |
| | Semen mean data Concentration | 78.7792b±0.22 | 94.5329a±0.050 | 47.2713d±0.035 | 63.0353c±0.06 |
| | Sum sperm mean | 31.5076ab±0.39 | 37.8291a±0.40 | 18.9943d±0.27 | 25.2600c±0.35 |
| 49 | Volume of Semen mean data | 40.0b±0.040 | 48.2a±0.032 | 24.00d±0.026 | 33.0c±0.024 |
| | Semen mean data Concentration | 80.1223b±0.11 | 96.1767a±0.063 | 480831d±0.038 | 64.9970.7c± 0.02 |
| | Sum sperm mean | 32.0489b±0.31 | 38.4786a±0.41 | 1923936d± 0.040 | 25.6493.2c±0.32 |
| 51 | Volume of Semen mean data | 41.0b±0.070 | 48.88a±0.036 | 24.00d±0.025 | 33.0c±0.025 |
| | Semen mean data Concentration | 80.6626ab±0.37 | 96.7929a±0.062 | 483814.5d±0.036 | 64.5619.6c±0.06 |
| | Sum sperm mean | 32.2609 a ±0.16 | 38.7731a±0.40 | 193765.5d±0.28 | 25.8787.5c±0.34 |
| 53 | Volume of Semen mean data | 41.0b±0.031 | 48.81a±0.032 | 24.00d±0.027 | 33.0c±0.022 |
| | Semen mean data Concentration | 81.2680a±0.51 | 97.5285a±0.053 | 488744d±0.036 | 65.0457c ±0.06 |
| | Sum sperm mean | 32.5028a±0.62 | 39.0334a±0.42 | 197700d±0.28 | 26.0600c±0.33 |
| 55 | Volume of Semen mean data | 33.0c±0.039 | 45.99a±0.033 | 18.00d±0.026 | 25.0c±0.025 |
| | Semen mean data Concentration | 82.1390a±0.32 | 98.5637a±0.051 | 492869d±0.035 | 65.7724c± 0.07 |
| | Sum sperm mean | 24.6384bc±0.60 | 29.5761a±0.42 | 147930.5d±0.28 | 19.7607.3c±0.34 |
| 57 | Volume of Semen mean data | 31.0 cd±0.023 | 34.9a±0.04 | 48.38d±0.025 | 23.6c±0.027 |
| | Semen mean data Concentration | 81.2530a±0.11 | 97.3909.2a±0.053 | 487753d±0.030 | 64.8937c±0.04 |
| | Sum sperm mean | 23.5601cd±0.56 | 28.2621.3a±0.42 | 141061d±0.27 | 18.8680c±0.32 |



The semen volume scale multiplies with $10^4$
* To ± S.D. * * * p= 0.05 * * * n= 5 * * * T= 20
* Means and standard deviations shown in Tables 1. * * Significance level (p.0.05).as, b , c, d among classes. * * * Number of animals per group. ***All animals used

**Fig. 2.** Relationship between the average gamma radiation exposure and the characteristics of the semen as the fetus ages from 39 to 49 weeks

group 2 data, and the only date seeds extract*(Phoenix dactylifera L.)* with a lower volume, concentration, and sum sperm ratio was the oral version. The results of this study showed that fixing natural chickens with date seeds extract *(Phoenix dactylifera L.)* at a level of 400 mg per kg body weight for 35 days daily did not significantly change the sperm data properties when compared to community gamma wave repairs. These results led to the protective effect of phenolic antioxidants, which were found during the examination of date seeds extract*(Phoenix dactylifera L.)*. This antioxidant can aid in lessening the effects of minor gamma ray damage on sperm. the release of unpaired radicals. On the other hand, unaffected prostaglandin production encourages flow and functions as an immunological modulator. Finally, the results of this study




The level of semen volume data multiplies with $10^4$

**Fig. 3.** The average gamma radiation dose as cock ages from 51 to 57 weeks and its relationship to semen characteristics

**Table 7.** Ratio according to characteristics of the semen data between groups

| Cock's age (weeks) | Parameters | Ratio% groupe2/groupe1 $X10^{-2}$ | Ratio % Group 3/ group 1 $X10^{-2}$ | Ratio % group 4/ group1 $X10^{-2}$ |
|---|---|---|---|---|
| 39 | Volume of Semen mean data | 121 | 61 | 80.8 |
| | Semen mean data Concentration | 121 | 58 | 80 |
| | Sum sperm mean | 120 | 56 | 80 |
| 41 | Volume of Semen mean data | 122 | 60 | 86 |
| | Semen mean data Concentration | 119 | 58 | 81.1 |
| | Sum sperm mean | 119.1 | 59.1 | 82.1 |
| 43 | Volume of Semen mean data | 112 | 61.1 | 81.1 |
| | Semen mean data Concentration | 121 | 60 | 80 |
| | Sum sperm mean | 119.2 | 60 | 80 |
| 45 | Volume of Semen mean data | 119.7 | 59.1 | 79 |
| | Semen mean data Concentration | 120 | 60 | 80 |
| | Sum sperm mean | 120 | 59.1 | 79 |
| 47 | Volume of Semen mean data | 120 | 60 | 80 |
| | Semen mean data Concentration | 119.2 | 57 | 79 |
| | Sum sperm mean | 120 | 60 | 80 |
| 49 | Volume of Semen mean data | 120 | 59 | 77 |
| | Semen mean data Concentration | 119.1 | 59 | 78 |
| | Sum sperm mean | 120 | 60 | 80 |
| 51 | Volume of Semen mean data | 121.0 | 61. | 80 |
| | Semen mean data Concentration | 120 | 60 | 80 |
| | Sum sperm mean | 119.0 | 58. | 77 |
| 53 | Volume of Semen mean data | 122.0 | 60 | 80 |
| | Semen mean data Concentration | 118.0 | 58. | 78 |
| | Sum sperm mean | 120 | 60 | 80 |
| 55 | Volume of Semen mean data | 146.0 | 59. | 79 |
| | Semen mean data Concentration | 120.1 | 61 | 81 |
| | Sum sperm mean | 120 | 61 | 81 |
| 57 | Volume of Semen mean data | 116.0 | 51 | 91 |
| | Semen mean data Concentration | 120 | 61 | 81 |
| | Sum sperm mean | 119.0 | 59.1 | 82.1 |

demonstrated that, when compared to the control group (group 1), which was given only food and water six hours a day for 35 days, group 2 repairs using date seeds extract significantly improved sperm properties data (volume, concentration, and sum sperm data) with parameters of 20%. This study focused on the oral administration of 400 mg $.kg^{-1}$.wt per day of date seeds extract*(Phoenix dactylifera L.)* at different doses of gamma radiation. This investigation helped to determine the amount of dates extract needed for this project. They discovered that, in comparison to the control group, the hens administered date seeds extract *(Phoenix dactylifera L.)* had considerably enhanced sperm parameters.

## CONCLUSIONS

This study discovered that modest dose gamma radiation exposure at continuous levels of dose for 35 days had an impact on the physiological properties of male chicken sperm. Because chickens still have an impact on the environment even at low energy doses, buildings housing chickens must be situated distant from nuclear power plants, research energy stations, and storage facilities for radioactive materials. In addition to its effect on how free radicals are produced, including hydrogen peroxide ($H_2O_2$), and the destruction of the double strand of DNA, which results in genetic mutation. This drug may be able to lower the rate of oxidative stress caused by dose of gamma waves exposure lower the average of toxins yields as a result of soft-dose wave with enhanced protection for longer periods. These results imply that date seeds extract*(Phoenix dactylifera L.)* functions as a beneficial antioxidant when consumed orally. Therefore, after increasing sperm quality, we recommend employing a small proportion of these oil chicken feed mixes to boost mating averages and, ultimately, raise animal yields. The use of date seeds extract *(Phoenix dactylifera L.)* in this study was positive according to the results obtained when compared with other antioxidants for the same conditions, as well as the availability of this substance in the Middle East, which makes it economically rewarding and useful in increasing fertility in chickens and thus increasing reproduction in economic terms.

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## CONFLICT OF INTEREST

The authors declare that there is not any conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/ or falsification, double publication and/or submission, and redundancy has been completely observed by the authors.

## LIFE SCIENCE REPORTING

No life science threat was practiced in this research.

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