

**ROLE OF CARROT SEED EXTRACTION AS CONTRACEPTIVE AND EMBRYO ABSORPTION  
IN FEMALE LABORATORY MICE MUS MUSCUIUS**

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**Abstract**

Carrot seeds have a long history of use in relation to fertility, particularly as an anti-fertility agent. In an effort to assess the possible effectiveness of carrot seed as a contraceptive and to more precisely pinpoint the processes underlying its purported effects, our study was carried out. White female mice served as the subjects of this investigation (*Mus musculus*), 36 animals total; 12 male and 24 female mice were used in the experiment, into three groups that resembled each other. A 200 mg/kg ether extract of *Daucus carota* L. was injected intraperitoneally into two of them. While the third group served as a control group, it was sprayed with 0.9% Normal Saline for 21 days. The use of carrot seed for contraception and fetal abortion is recorded. Studies suggest that several modes of action may contribute to the anti-fertility effect, including an effect on the estrous cycle and anti-progestogenic activity.

**Keywords:** *Daucus Carota* L, Carrot Seed, Anti-Fertility, Contraceptive, Estrous Cycle.

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## Introduction

A number of scientific conferences, especially in the recent period, directed us to enter the stage of using medicinal plants and herbs as alternatives to chemicals because of their few side effects on human health (Riddle *et al.*, 1997). It is to reduce female fertility and prevent pregnancy.

The role of carrot seeds, *Dacus carota* L., as an anti-fertility agent for female rats (Riddle *et al.*, 1997; Tobyn *et al.*, 2011). In medical fields, especially as an antioxidant, a vasodilator, a blood sugar reducer, an antibacterial and antifungal agent, a diuretic, it has a contractile effect, milk production, anemia treatment, and a reduction in the incidence of cancer (Sharma *et al.*, 1976). A number of medicinal plants with estrogen content have been used to reduce female fertility, and carrot seeds are one of the most important sources of phytoestrogens, and their flavonoid compounds and oils have been used as contraceptives (Clark and Willson, 2003) The carrot plant is one of the widely used medicinal plants, as it belongs to the order called Apiales and belongs to the Umbellifera family (Apiaceae). It is a flowering biennial plant, the plant is characterized by the presence of fine hairs carrot seeds are used to increase fertility and increase the number of sperm (Waston and Dallwitz, 1992) Many studies have found that giving gentamicin to male rats at a dose of 5mg/kg per day leads to the death of germ cells that generate sperm and reduces the number of sperms, on the other hand multiple studies showed that giving carrot seeds with gentamicin leads to an increase in the number of sperms in the tail of the epididymis and its motility, in addition to an increase in the level of luteinizing hormone and testicular adipose after its decrease as a result of the administration of gentamicin (Dawson *et al.*, 1992).The lethal dose for rats and guinea pigs after oral administration of carrot seed oils was 5g/kg (MSDS, 2008), whereas the lethal dose for laboratory rats was 8g/kg, according to NSSCI study (Anahara *et al.*, 2008). In view of the foregoing, and to know the biological effectiveness of the seeds of the carrot plant in the fertility of female mice, the following criteria were chosen in this study: Calculating the number of implantation sites, zero objects, live and dead fetuses.

## Materials and methods

### Laboratory animals: Experimental animal

In this study, male and female laboratory mice, *Mus musculus*, were used. Mice were selected; with sexually mature ages (6-7) weeks and a weight ranging between (21-25) grams. The animals were raised in the animal house of the College of Veterinary Medicine / University of Basra. The animals were provided with animal feed and water continuously.

### Preparation of organic solvent extract of carrot seeds

The extract of the organic solvent of the seeds of the carrot plant was prepared according to the method of (Gambhir *et al.*, 1966) whereby 20 grams of the dried material of the carrot seeds was taken, and the material was extracted sequentially by the Soxholate sequential extraction device by using (200) milliliters of solvent petroleum ether for 24 hours, after which (2) grams of the dry extract of the solvent were dissolved in (10) milliliters of distilled water to obtain a stock solution (0.2) grams / milliliter, and this p

## Experimental design

### Reproductive parameters

In this part, (36) mature mice (12 males and 24 females) were used. Females were mated with males, and then the animals were divided into three groups: process was repeated several times to obtain an abundant active substance after that. Attend the focus 200 of the total body weight.

**Control group:** It included 8 females and 4 males, which were mated with (1 male: 2 females) after making sure that pregnancy occurred by observing the vaginal plug, which is an indication of the first day of pregnancy, as well as by examining the females in our appearance. Pregnant females were identified and males isolated from them. Females were injected in the seventh day of pregnancy every three days with normal physiological solution (0.2) ml into the peritoneal cavity and the females were left to give birth naturally.

**The first treated group:** it included 8 females after mating them with males and making sure that pregnancy occurred. Pregnant females were isolated and injected with (0.2) ml of the petroleum ether extract of carrot seeds at a concentration of 200 mg / kg on the seventh day every three days until day 21 to note the extent of the effect of the extract of carrot seeds on abortion of pregnant females.

**The second treated group:** It included 8 females who were mated with \_ males and not isolated from each other. After that, the females were injected from the first day of mating with the petroleum ether extract of the seeds of the carrot plant with a concentration of 200 mg / kg of body weight per day until the 21st day to observe the effect of the extract of the seeds of the carrot plant in contraception.

### Specimens Collection

The mice were anesthetized after the completion of the experiment using chloroform, which was placed in a box inside a glass box, and then the mouse was inserted into the box. After the anesthesia process, it was placed on a piece of cork and dissected to calculate the number of implantation sites, the number of zero bodies, and the number of live and dead embryos.

## Results

### 1-Effect of petroleum ether extract of carrot seeds on female reproductive parameters during pregnancy.

The use of a concentration of 200 mg/kg of the petroleum ether extract of the seeds of the carrot plant and its intraperitoneal injection in female mice during pregnancy from the seventh day of pregnancy until the 21 day led to the absorption of many embryos and not obtaining live embryos or dead embryos, and this is shown in the table.

It is noted that there are no implantation sites for embryos after one week of pregnancy, they were in the control group 25 mice, as well as the absence of zero bodies and the absence of any live fetus or dead fetus compared to the control group.

**Table (1) Effect of petroleum ether extract of carrot seeds on inducing abortion (after one week of pregnancy).**

Groups	N. of females	N. of implantation sites	N. of corpuscles	N. of live embryos	N. of dead embryos
Control	8	25	25	25	8
Treatment	8	0	0	0	0

N. means number.

## **2-The effect of petroleum ether extract of carrot seeds on female reproductive parameters (contraception).**

When using a concentration of 200 mg/kg of the petroleum ether extract of the seeds of the carrot plant and injecting it intraperitoneally in female laboratory mice during the first day of mating until day 21, which is the day when female mice give birth to the control group naturally, no pregnancy was observed in the treated female mice. Implantation sites, zero bodies, and the absence of any live or dead fetus, as shown in Table (2).

**Table (2) Effect of petroleum ether extract of carrot seeds (contraception).**

Groups	N. of females	N. of implantation sites	N. of corpuscles	N. of live embryos	N. of dead embryos
Control	8	25	25	25	0
Treatment	8	0	0	0	0

N. means number.

## **Discussion**

### **Effect of petroleum ether extract of carrot seeds on female reproductive parameters.**

The results of the current study indicated that administering the petroleum ether extract to carrot seeds at a dose of 200 mg/kg during pregnancy in female mice led to the absorption of embryos and the absence of implantation sites, yellow bodies, live and dead embryos, compared to the control complex, as the results of the current study showed, when using the above concentration of 200 mg/ kg of carrot seed extract as a contraceptive (Kuhn and Xi, 2006, it was found that the seeds of the carrot plant led to contraception in female laboratory rats compared to the control group. A number of researches mentioned that there are plants that act as contraceptives in laboratory animals (Tobyn et al., 2011). In a study conducted by (Majumder et al.1997) have found DC seed extract in the ovaries of treated mice suggest that ovarian progesterone production may be impaired as a result of DC seed administration. it was found that the benzene extract of Hibiscus rose sinuses works to change the ovarian activity and the estrous cycle in mice by affecting the pituitary

gland hormones, which are the follicle-stimulating hormone and the Luteinizing hormone (Majumder et al.1997).

Another research found that the oils extracted from the seeds of the carrot plant, *Daucus Carota L.*, had anti-pregnancy efficacy in female albino mice (Bennett, 1993). The failure to obtain an embryo, when treated with a concentration of (200 mg / kg) can be explained by the ability of the seeds to prevent the fertilized egg from germinating inside the womb, and this is due to the estrogenic activity of the phenolic compounds of the carrot plant seeds, which lead to abortion of embryos if they are formed, and this is consistent with the results of other studies that confirmed the role of carrot seeds in cases of absorption and abortion of embryos (kamboj and Dhawan, 1982; Bhatnagar, 1995).

Some studies indicated that carrot seeds have a progesterone-lowering effect by prolonging the pre-estrus phase and increasing the ratio of the level of estrogen to progesterone, and thus causing contractions in the smooth muscles of the lining of the blood and aborting fetuses as a result of a decrease in the level of the hormone progesterone (Kaliwal *et al.*, 1987) and could be explained by the absorption of embryos and the non-occurrence of pregnancy to the effect of carrot seeds after injection on thehypothalamic-pituitary axis, which was reflected in the level of LH and FSH (Keenan *et al.*, 1997 ; Baveja et al., 2000).

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