



The Effect of the Coriander Seeds on Reproductive Parameter on Female Mice

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Abstract

The aim of this study is to evaluate the effect of the coriander seeds aqueous on reproductive parameter on female mice. Adult female mice (n=30) were included in the present study, mice were randomly divided into control (n=10) and experimental (n=20) groups. The control group just received 4CC distilled water daily. However, the experimental groups split into two groups each included ten mice. (G.1) received 50mg/Kg/mouse and (G.2) received 100ml/ Kg /mouse powder of Coriander in water, for 21 days consequently. The study showed that there was a significant difference (p<0.05) in the total body weight of female mice that treated by coriander comparing with control group, while there was a significant difference (p<0.05) in the weight of ovaries and (p<0.05) in the weight of uteruses of female mice that treated by both two doses of coriander comparing with control group. The histological study showed a significant (p<0.05) decrease in diameters of ovaries and number of primary & secondary ovarian follicles and (number, diameters) of Graffian follicles of female mice that treated with two concentrations of coriander comparing with control group. In sex hormones the study found that a significant (p<0.05) decrease in FSH and LH in treated groups with two concentrations of coriander comparing with control group . The results of female fertility don't show conception during 21 after stopping treatment in experiment mice comparing with control group.

Key words: Coriander seeds, Reproductive Parameter, Female, mice

Introduction

Coriandrum sativum (Linn.), a glabrous, aromatic, herbaceous annual plant, is well known for its use in jaundice. Essential oil, flavonoids, fatty acids, and sterols have been isolated from different parts of *C. sativum*. The plant has a very effective antioxidant profile showing 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity, lipoxygenase inhibition, phospholipid peroxidation inhibition, iron chelating activity, hydroxyl radical scavenging activity, superoxide dismutation, glutathione reduction and antilipid peroxidation due to its high total phenolic content with the presence of constituents like pyrogallol, caffeic acid, glycitin, etc (Panda S *et al* 2009). *Coriandrum sativum* (coriander) has been reported to have a number of possible medicinal attributes including antispasmodic, carminative and stomachic properties (Alison and Peter, 1999). Additionally, coriander has been advocated as an anti-diabetic remedy. Stigmasterol also known as Wulzen anti-stiffness factor is one of a group of plant sterols, or phytosterols, that include β -sitosterol, campesterol, ergosterol (provitamin D2), brassicasterol, delta-7-stigmasterol and delta-7-avenasterol, that are chemically similar to animal cholesterol. Phytosterols are Stigmasterol is used as a precursor in the manufacture of semisynthetic progesterone. (Kanimozhi D and Ratha Bai, 2012). The use of complementary traditional medicine which includes herbal medicines as remedies for human diseases has expanded rapidly attributable to affordability, accessibility and efficacy (Arthur, F. K *et al*, 2011) . Various medical plants are used by the population in nature or in the form of pharmaceutical preparation and their use has grown worldwide (Frederico E. H *et al* 2012) . World health organization (WHO) estimates that approximately 80% of the developing world's population is using traditional medicine for primary healthcare ((World health organization, 2002) . However, there is a prevalent misunderstanding that herbal medicines are devoid of toxic effects . Bioactive compounds derived from medicinal plants can be useful but might have serious dose related side effects (Taylor J *et al* 2001) .

Coriandrum sativum L. (Apiaceae) is an annual herb, the fresh leaves and dried seeds of which a common component of middle eastern, Mediterranean, Indian, Latin American, African and Southeast Asian cuisines (Patel, D *et al* 2011). It's commonly known as coriander in English (Deepa and Anuradha, 2011) and famous as cilantro (Oudah and Ali, 2010).

Experimental studies using different methodologies demonstrated that *Coriandrum sativum* leaves contain essential oil, flavonoids (quercitrin, isoquercitrin), polyphenols (rutin, caffeic acid, ferulic acid, galic acid and chlorogenic acid). Other molecules are found like linalool (Monoterpene alcohol) linoleic acid, sugars and proteins (Reyes M.R *et al* 2010) (. Nambiar, V.S *et al* 2010). The methanolic and aqueous extracts of coriander leaves have been assessed for total phenolic content (Wong and Kitts, 2006).

Ishikawa T *et al* (2003) demonstrated that monoterpene, monoterpene glucose sulfate and other glycosides are water soluble compounds. In humans, the reproductive cycle, called the menstrual cycle, lasts approximately 28 days, in rodents this cycle, called the estrous cycle, lasts approximately 4-5 days. In females, gonadotropin-releasing hormone (GnRH) neurons present in the septal area and hypothalamus send their axons to median eminence. GnRH released there reaches the anterior pituitary where the gonadotrophs are stimulated to secrete luteinizing hormone (LH) and follicle-stimulating hormone (FSH) (Sarkar *et al.*, 1976; Freeman, 1994) The coordinated development of follicles within the

ovary is under the tight control of both hormones and growth factors (Findlay & Drummond 1996, McGee & Hsueh 2000, Richards 2001, Fortune 2003).

Material and Method

Adult female mice (n=30) were included in the present study. The mice were 8 weeks old and weighing 28±3g each. Male mice were housed in temperature controlled rooms (25C°) with constant humidity (40-70%) and 12h/12h light/ dark cycle prior to experimental protocols. All animals were treated in accordance to the Principles of Laboratory Animal Care. All mice were fed a standard diet. The daily intake of animal water was monitored at least one week prior to start of treatments in order to determine the amount of water needed per experimental animal. Thereafter, the mice were randomly divided into control (n=10) and experimental (n=20) groups. The control group just received 4CC distilled water daily. However, the experimental groups split into two groups each included ten mice. (G.1) received 50mg/L/mouse and (G.2) received 100ml/L/mouse powder of Coriander in water, for 21 consequence days in water.

The body weights and genitals were measured, weights of female mouse before and after the expiration of the term (21) days and compared to a set of control using the balance of normal. As for the genitalia (ovaries and uterus) has been eradicated after the killing and weighed using a sensitive balance. This study was conducted on the left ovary and uterine left.

The numbers ovarian follicles, primary and secondary vesicles and graffian follicles were calculated by series slides and compared with control.

The use of compound microscope Olympus-CH3O-japan in measuring the rates of the diameters of the ovaries in female mice using standard exact lens kind ocular micrometer after calibrated scale flour for the theater stage micro meter and the power of magnification x10 (x10 x 10x 1.250 = 50) were compared with a control group.

Statistical analysis

Data are presented as mean ± standard error of mean (SEM) using SPSS version 15. Statistical comparisons were made using the ANOVA test for comparison of data in the control group and the experimental groups. A p value of <0.05 was considered significant.

Result and Discussion

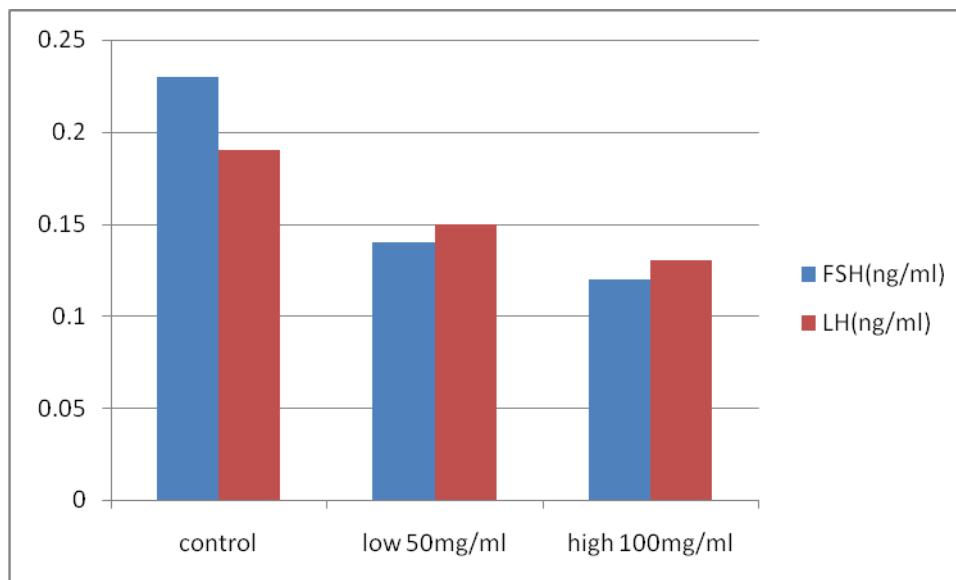
The study showed that there was a significant difference (p<0.05) in the total body weight of female mice that treated by coriander comparing with control group. This result was not consistent with the result that reported by Al-Said MS, *et al* (1987). While there was a significant difference (p<0.05) in the weight of ovaries and (p<0.05) in the weight of uterus of female mice that treated by both two doses of coriander comparing with control group Table.1. The histological study showed a significant (p<0.05) decrease in diameters of ovaries and number of primary & secondary ovarian follicles and (number, diameters) of Graffian follicles of female mice that treated with two concentration of coriander comparing with control group. In sex hormones the study found that a significant (p<0.05) decrease in FSH and LH in treated groups with two concentrations of coriander comparing with control group. The results of female fertility don't show conception during 21 after stopping treatment in experiment mice comparing with control group. This result was not consistent with the result that reported by Al-Said MS, *et al* (1987), Momin *et al* (2012) who found that effect of the aqueous extract of fresh coriander seeds has been studied on female fertility in rats. Parameters included effects on oestrus cycle, implantation, foetal loss, abortion, teratogenicity and serum progesterone levels on days 5, 12 and 20 of the pregnancy. The extract at doses of 250 and 500 mg/kg orally produced a dose-dependent significant anti-implantation effect, but failed to produce complete infertility.

Table .1. The Effect of different doses of *Coriandrum sativum* on the fertility of female mice body and organs weight

Dose 50mg/dl	Dose 100mg/dl	Control		Parameters
		SE Mean±	SE Mean ±	
Mean	±			
Body weight	27.40 ± 0.74	26.10±0.56*	31.60± 0.93*	
Uteruses weigh	0.890±4.45	0.23±0.058*	0.26±0.14*	
Ovaries weight	0.038 ±0.089	0.030± 0.01*	0.02±0.03*	
Diameters of ovaries	0.033 ± 0.048	0.029± 0.03*	0.02±0.23*	
1st ovarian follicles (N)	4.300±0.47	0.70± 0.26*	0.9±0.27*	
2nd ovarian follicles (N)	2.600±0.40	0.40±0.22*	0.10±0.10*	
Graffian follicles (N)	2.900±0.40	0.300±0.21*	0.100±0.10*	

Table.2. The Effect of *Coriandrum sativum* on the reproductive parameters of female mice

Parameter	Control	<i>Coriandrum sativum</i> 50mg/dl	<i>Coriandrum sativum</i> 100mg/dl
FSH(ng/ml)	0.23±0.07	0.14±0.03	0.12±0.034
LH(ng/ml)	0.19±0.02	0.15±0.09*	0.13±0.056



Conclusion

The present study showed that there was a significant difference ($p < 0.05$) in the total body weight, weight of ovaries and weight of uteruses of female mice that treated by both two doses of coriander comparing with control group. The histological study showed a significant ($p < 0.05$) decrease in diameters of ovaries and number of primary & secondary ovarian follicles and (number, diameters) of Graffian follicles of female mice that treated with two concentration of coriander comparing with control group. In sex hormones the study found that a significant ($p < 0.05$) decrease in FSH and LH in treated groups with two concentrations of coriander comparing with control group. The results of female fertility don't show conception during 21 after stop treatment in experiment mice comparing with control group.

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