High End Versitality of Nigella Sativa – (A Miracle Herb)

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Abstract

The task force on plants for fertility regulation in men continued with its program to identify novel prototypes in plants alleged to have fertility regulating properties. *Nigella Sativa* seeds are frequently used in folk medicine in the Middle East and some Asian countries for the promotion of good health and treatment of many ailments.A wide majority of medicine plants possess pharmacological principles, which has rendered them useful as curatives for numerous ailments. According to the World Health Organization (WHO) reports, 70-80% of the world population confide in traditional medicine for primary health care (3). Plants and derivatives of plant played a key role in world health and have long been known to possess biological activity. Thirty percent of all modern drugs are derived from plants (4). In addition, Plants have a long folklore of use in aiding fertility, including fertility-enhancing propThe seeds of the Nigella sativa plant, more commonly known as black seeds or black cumin, are a flavorful food additive that may have medicinal benefits. Health professionals with MemorialSloan-KetteringCancerCenter explain that Nigella sativa seeds may be beneficial in the treatment or prevention of high blood pressure, respiratory diseases, inflammation and cell damage, though additional research studies are necessary to substantiate these claims.Oral administration of aqueous extract of *Nigella sativa* seeds to male rats at the dose level of 100mg/kg body weight for 60 days did not cause body weight loss but decreased the weight of testis, epididymis, seminal vesicle and ventral prostate in a significant manner. Sperm motility as well as sperm density were reduced highly significantly which resulted in 70% negative fertility. Serum testosterone level showed highly significant reduction. Biochemical parameters like total protein and Sialic acid in testis, epididymis, seminal vesicles and ventral prostate were decreased significantly where as testicular cholesterol concentration was elevated. Investigation prove no interferens of drug in hematological parameters of the experimental animal

Keywords- *Nigella sativa* seeds**,** Antispermatogenic, Sialic acid, Sperm motility, Sperm density

Introduction

In many developing contries ,traditional medicienes are widely utilized in thetreatment of various ailment on an empirical basis. a variety of plants have been used for the treatment of diabeties and (Upadhyay et al 2004) and male reproduction (Das et al 2004). *Nigella sativa* seeds has been used for medicinal purposes for centuries, it is regarded as one of the greatest forms of healing medicine available . Seeds and oil extracted of this plant are used for medicinal purposes. It has been widely used as antihypertensive, liver tonics, diuretics, digestive, anti-diarrheal, appetite stimulant, analgesics, anti-bacterial and in skin disorders. Extensive studies on *N. sativa* have been carried out by various researchers and a wide spectrum of its pharmacological actions have been explored which may include anti diabetic, anticancer, immunomodulator, analgesic, antimicrobial, anti-inflammatory, spasmolytic, bronchodilator, hepato - protective, renal protective, gastro-protective, antioxidant properties, etc.it's seed has also been tested for ant fertility/antispermetogenic effect. Oral administration of aqueous extract at the dose level 100

mg/rat/day for 60 days ,male rats were kept for mating with female rats than 61 th day rats were sacrificed. -This dose brought about highly significant decrease in the weight of testis,epididymis,seminal vesicles ,ventral prostate and vas deferens The assay of various hormones reflect that serum testosterone level reduced significantly in the experimental group -It is concluded that fertility was reduced by 70%.

Key Words - Nigella sativa ,hormonal assay ,sperm parameters

Material and Method

*The **Nigella sativa seeds** were collected from theknown herbal mediciene shop identified in Department of Botany and powdered and (100)gm dry powder was macerated in 200ml of distilled water and stayed for 36 hours at room temperature and filtered to obtain a final crude extract in the form of powder. 24.75% yield was obtained from 100 gms of flower. This powder was dissolved in distilled water which was administered to the male rats while control group rat received equal amount of distilled water. Adult, healthy male albino rats of wistar strain 16-18 week old were selected from the inbred colony and the animal were maintainedaccording to the guide lines for care and use of animals for scientific research (IndianNationalScienceAcademy, 2000) through out the course of investigation.*

The rats were divided in two groups having 10 rats in each group.

***Group 1-** Vehicle treated i.e. 0.5ml/rat/day distilled water for 60 days.*

***Group 2-** 100mg/rat/day Nigella sativa dissolved in 0.5ml of distilled water for 60 days.*

Fertility test

The mating test of control and treated groups were performed on day 55-60 using the method of W.H.O (W.H.O Protocol 1990) the females were separated for normal delivery. On 16th day of pregnancy the implantation site (normal and absorbed foetus) were recorded.

Autopsy

After 24 hours of last dose rats were weight and autopsied under light ether anesthesia the blood was collected from heart in pre-heparinized tubes for hematological studies and serum was also separated from non-heparinized tubes for RIA studies. The animal were autopsied, the reproductive and vital organs (testis, epididymis, seminal vesicle, ventral prostate, liver, adrenal and kidney) were taken out and trimmed free of fat and weight separately on electronic balance.

Sperm motility and density

At autopsy, the epididymis wasexposed and spermatozoa were taken out by cutting cauda epididymis for sperm motility (Srikanth et al 1999) and sperm density (Zaneveld and Polakoski 1997).

Haematology

Total erythrocyte Count(Schalm et al, 1975), Total leukocyte count (Lynch et al 1969), haematocrit by microhaematocrit method (Schalm et al 1975).The Haemoglobin level was estimated by cynomethanoglobin method (Makarem et al 1974) blood sugar (Astoor and King 1954) and blood urea (Varley 1969) were estimated while serum was assessed for the estimation of testosterone by Radio Immuno assay (commercial kit).

Biochemistry

Frozen testis, epididymis, seminal vesicle and ventral prostate were used for the estimation of protein (Lowry et al 1951), glycogen (Montogomery 1957), cholesterol (Oser 1965) and Sialic acid (Warren 1959).

Statistical analysis

The mean and standard error of mean (SEM) were calculated from the data obtained by the experiment and The treated groups were compared to the control using the student's ' t' test (Ipstein and poly 1970).

Results

Body and organ weight-

Oral administrations of Nigella sativa seed extract did not cause any change in the body weight when compared to their initial body weight weight. However it showed significant reduction in weight of testes, epididymis, seminal vesicles and ventral prostate ($p \leq 0.001$) in comparison to the control group (Table -1)

Sperm dynamics and serum testosterone –

Percentage of sperm motility, sperm density were decreased significantly ($p<0.01$) where as fertility rat was 45% negative after the administration of Nigella sativa . Serum testosterone level was reduced significantly when compared with control group .Number of pregnant females; number of implantation sites and number of viable fetuses were also declined in G-11 (Table-2).

Tissue Biochemistry-

Total protein and Sialic acid content of testis, epididymis, seminal vesicles and ventral prostate were decreased significantly following the administration of Nigella sativa seed extract (glycogen level in testis and liver reduced slightly where as cholesterol level was increased slightly (Table-3).

Blood Profiles-

Nigella sativa showed that total erythrocytes count, total leukocyte count, haemoglobin, haematocrit, blood sugar and blood urea were in normal range (Table-4).

Discussion

Oral administration of sativa Seed extract (COFAq) showed reduction in the weight of testes, epididymis, seminal vesicles and ventral prostate Reduction in weight of testis and other accessory sex organs might be due to low level of androgens (Sharma and Jacob, 2001), which was reflected in decreased serum testosterone level in treated rats. Sperm motility and density in cauda epididymis and testis were decreased which shows alteration in maturation and production of sperm (Sarkar et al 2000).

Protein content of reproductive organs were significantly was decreased due to low level of androgens (Chinoy and Bhattacharya 1997) which was confirmed in low concentration of serum testosterone.

Decreased level of Sialic acid in testis, epididymis, seminal vesicles and ventral prostate reflected loss of androgens (Gupta et al 2001). Mode of action of Nigella sativa seed extract was through pituitary gonadal axis, which was confirmed in decreased serum testosterone level. After the administration Nigella sativa increased testicular cholesterol might be due to arrest of steroidogenesis of testosterone (Gupta et al 2002) so to accumulate in the testis.

From the present study it is concluded that the oral administration of crude ethanolic extract of Nigella sativa may lead to fertility control in male rats due to interfere in the testicular androgens level which arrest the process of spermatogenesis in testis without disturbing general metabolism.

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