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Effects of fasting on libido in normal male wistar rats

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ABSTRACT

Fasting has been advocated to have numerous effects including reduction of libido. The aim of this study is to investigate the effects of varying duration of fasting on sexual behavior (libido) in sexually normal male albino rats. Twenty rats were divided into four groups of five rats each. Group I served as the control and had access to food and water, Group II were fasted for 6 hr, Group III were fasted for 12hr daily for four weeks and Group IV were administered with Depo provera (Medroxyprogesterone) 5mg/kg b w intramuscularly that reduce libido. Libido was then assessed in male rats by observing the mounting frequency and post ejaculatory interval. The study showed no significantly (p>0.05) decreased mounting frequency after 6 hr and 12 hr in fasted male rats when compared with the control group. Post ejaculatory interval did not significantly (p>0.05) change in the fasted male groups after 6 and 12hr respectively when compared with the control group. In conclusion, the result obtained revealed that 6 hr and 12hr complete fasting for four weeks produced no significant reduction of libido in normal male wistar rats.

Key words: Fasting, libido, mounting frequency, rats, post ejaculatory interval,

INTRODUCTION

Fasting generally means eating no food and drinking only water for a period of days, but there are different approaches. Sometimes a person doesn't eat or drink anything at all (a dry fast) throughout the fast [1]. A juice fast can mean drinking only water and juice for a day or several days. Tea, broth, or other special drinks may be part of fasting. Fasting is often promoted as part of a "detoxification" process in some types of metabolic therapies for cancer or other conditions [2]. Religious fasting has different requirements. One group fasts from food and drink, but only during daylight hours for a month out of the year. Another tradition includes a 24-hour dry fast on specific days. Yet another forbids certain foods (such as animal products and alcohol) for several weeks at a time, so that a person eats only certain types of foods and avoids others [3-4]. Sexual function is an important component of human quality of life and subjective well being. Sexual problems are widespread and adversely affect mood, well being, and interpersonal functioning [5]. Fasting has been observed to have the ability to cleanse the body, reduce gonadotropin secretion and libido [6-7]. Libido is another term for sex drive, which is a person's over all desire and ability to engage in sexual activity (Gregory, 2010). This study was aimed at evaluating the effect of fasting on libido of male normal albino Wistar rats.

MATERIALS AND METHODS

Location and duration of the study

The research work was carried out in the Department of Human Physiology, Faculty of medicine Ahmadu Bello University, and Zaria in the Month of September, 2010.

Drugs

Drugs used such as Depo provera (500mg), progesterone, propylene glycol, ethyl oestradiol were purchased from a reputable pharmacy in Zaria in 2010.

Experimental animal and management

Twenty four sexually active male albino Wistar rats of both sexes weighing between 180-240 g were used for the study. They were obtained from the Animal House of the Department of Human Physiology, Ahmadu Bello University, and Zaria. The animals were maintained under laboratory condition in order to acclimatize and were allowed to have free access to water *ad libitum* prior to the commencement of the research work.

Experimental protocol

The male animals were starved singly for four weeks in an iron cages having wide mesh and raised from the floor to prevent coproghagia. The iron cages were obtained from the Department of Human Physiology. The rats were randomly divided into the following groups as follows:

Group 1: Served as the negative control and were given food and water.

Group 2: Were fasted completely (deprived of food and water) for 6 hours daily.

Group 3: Were fasted completely (deprived of food and water) for 12 hours daily

Group 4: Served as the positive control and received a standard drug that is known to reduce libido (Depo provera 5mg/kg b w) intramuscularly for three weeks before being tested for libido.

Making the females receptive

Male animals were made receptive to females rats by bringing them into heat by methods described by Szechtman *et al.*, (1981) [9]. This is because the female rats would allow mating only during their estrus phase. The females were administered suspension of ethyl oestradiol orally at a dose of 100μ g/ml for two days before pairing plus progesterone injected subcutaneously at a dose of 1mg/ml six hours before pairing. The receptive females were introduced into the cages of the males with one female to one male and the observation for mating behavior was commenced immediately and continued for the first two mating series. The test was terminated if the male fail to evidence sexual interest and if any of the female did not show receptivity, she was replaced by another artificially warmed female. The occurrence of events and phases of mounting was recorded as soon as they appeared from which the frequencies were calculated later.

Test for libido

This was assessed by observing the mounting frequency and post ejaculatory interval both of which are considered as indices of potency and libido [10].

Mounting frequency

The number of times the males rat mounts the female or the number of mount before ejaculation was observed, recorded and compared with those of control and standard groups

Post ejaculatory interval

The time from the first ejaculation up to the next intromission by the male was observed, recorded and compared with those of control and standard groups respectively.

Statistical analysis

The results obtained were represented as mean \pm SEM and statistically analyzed using one-way analysis of variance (ANOVA) with Tukey's multiple comparison post hoc tests to compare the level of significance between control and experimental groups. All statistical analysis was evaluated using SPSS version 17.0 software. The values of p < 0.05 were considered as significant [11].

RESULTS AND DISCUSSION

 Table 1: Effects of fasting on mean (±SEM) mounting frequency and post ejaculatory interval in male rats

Mounting frequency	Post ejaculatory interval (s)
20.60±8.71	132.80±36.65
11.00±2.26 ^{ns}	259.0±115.09 ^a
14.80±2.22 ^{ns}	127.0±77.97 ^{ns}
27.0±77.7 ^{ns}	136.40±136.15 ^{ns}
	Mounting frequency 20.60±8.71 11.00±2.26 ^{ns} 14.80±2.22 ^{ns} 27.0±77.7 ^{ns}

 $a^{a}p < 0.05$ is statistically significant when compared to control group, while ns = not significant when compared to the control group

Results obtained from this study showed that complete fasting of the animals for 6 hrs and 12 hrs did not significantly (p>0.05) reduce the mounting frequency in the tested animals when compared to the control group. There was no significant (p>0.05) reduction in the post ejaculatory interval in the group fasted for 12 hrs. However, the post ejaculatory interval was significantly increased (p<0.05) in the group fasted for 6 hrs when compared to the control group as showed in table 1.

DISCUSSION

Sexual function is an important component of human quality of life and subjective well being [5]. In the present study, the effect of fasting was tested in normal male albino rats for its effect on libido. The study showed that fasting the animals completely for 6 hours and 12 hours did not significantly reduce the mounting frequency in the tested animals when compared to the control group. There was no significant reduction in the post ejaculatory interval in the group fasted for 12 hrs. However, the post ejaculatory interval was significantly increased in the group fasted for 6 hrs when compared to the control group. The mounting frequency and post ejaculatory interval are both considered as indices of libido. Marks *et al.*, (1992) [12] and Murphy *et al.*, (2009 [13] have reported that mild to prolonged fasting (24-96hrs) enhances neuropeptide Y release and the number of depolarized neuropeptide – GI neurons in response to decreased glucose level. Neuropeptide Y has been demonstrated to decrease sexual behavior in both male and female rats [14]. Therefore, the mechanism through which fasting reduces libido may be via neuropeptide Y pathway mediated through increased $5^{!}$ –AMP-activated protein kinase [15].

CONCLUSION

In conclusion, the study showed that fasting the animals completely for 6 hours and 12 hours did not significantly cause a reduction in libido in the animals as evidenced in the number of mounting frequency and post ejaculatory interval.

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