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Research Article

Impact of Herbal Aphrodisiac *Pausinytalia yohimbe* (BURANTASHI) on the Morphology of Sperm Cells in Adult Male Wister Rats and Mice

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Abstract

Burantashi *Pausinytalia yohimbe* is been used as a local aphrodisiac to enhance sexual activities, it is very common amongst the northern Nigerian men, it is also used in suya preparation. The effect *P. yohimbe* has on the fertility of man and animals has been discussed, although it enhances the virality as regards sexual performance does it in turn have negative impact on the sperm cell quality and if it does, does it affect the morphology of the sperm cells and what kind of morphological changes do occur. 54 Adult male Wister rats where acclimatized and broken down into study groups with the control group as a model of comparison, they were broken into 6 rats in each group, the *P. yohimbe* extract where administered orally to the rats at 200mg and 400mg concentrations for 14 days, 28 days and 48 days respectively after which they were sacrificed and the sperm cells where analysed for possible morphological abnormalities. The rats at day 14, 28 and 48 with the increase in concentration and dose, noticeable significant changes ($p<0.005$) where observed with 200mg and 400mg of day 14, 28 and 48 having significant difference in the abnormal sperm cells as compared with the control groups who where fed water and feed. The abnormal morphology ranged from headless, tailless, short tail, big head and double tail, with the Headless and tailless morphological changes having the highest percentage occurrence. The fact that Burantashi *P. yohimbe* enhances sexual performance doesn't mean it has not effect on the sperm cell quality as observed in this study it impacts on the morphological changes observable by their shape, size and density variance from those not orally administered *P. yohimbe.*

Keywords: Burantshi; Morphology; Aphrodisiac; *Pausinytalia johimbe*

Introduction

Pausinystalia johimbe is a common evergreen tree which belongs to the family of the Rubiacease, this plant is known to be found amongst the south, west and central African region in then main forest and jungles of cameroun, Nigeria, Gabon and equatorial guinea. This tree is known to grow up to 30 meters high and has the capacity to sprout out heavily having brown colored backs which is usually spotted with lichen [3]. The stems and branch grow extensively and the have elliptical leaves. This plant is known amongst the locals as Burantashi, it functions as a sexual enhancer to boost erection. Apart from its aphrodisiac properties it is also used to treat exhaustions or an energy booster, chest pain, skin disorders and inflammations [4,6].

Burantashi (*P. yohimbe*) is a very popular plants amongst the men folk as the alkaloids (*yohimbe*) which is one of its major constituent is used as a sex enhancer. From research it has be observed that *Yohimbe* extract in sufficient dose reflects as an adrenoceptor blocker thereby it enhances erection . In Nigeria, the powdered extract from the bark of the tree of *P. yohimbe* as popularly called

burantashi which means "penis get up" in the local Hausa language, apart from being used as an aphrodisiac it is commonly used in "suya" barbecued meat here in Nigeria [6].

Due to the widespread usage of Burantashi amongst the males in Nigeria, there seem to be a connection between its usage and infertility, as some studies portends is usage and the link with infertility and sperm cell quality amongst sexually active males.

Materials and Methods

Plant collection and extraction

Pausinystalia yohimbe stem bark (burantashi) was obtained from a local herbal practitioner in Yola, Adamawa state and was authenticated in Plant Biology and Biotechnology Department, Faculty of Life Sciences, University of Benin, Benin city. A voucher number assigned PBB/19/23/10043. The collected stem bark was dried for 14 days under shade away from the sun and thereafter ground into powder using an electric powered locally fabricated mill. The bark powder (BBP) was preserved and dried for mixture with feed at various concentrations.

Laboratory animals

A total of forty eight (54) adult male Wister rats (30 – 40g) were obtained from the Animal production unit of the Faculty of Veterinary Medicine, University of Benin. The animals were housed and acclimatized under specific conditions with abusing the laboratory animals, they were housed in metabolic cages in optimal 13H/11H light/dark schedule and the animals were provided with standard water and feed which was administered ad libitum. All Studies was carried out in the Veterinary Anatomy Department of the Faculty of Veterinary Medicine, University of Benin, observing strict SOP on handling laboratory animal [1].

The rats were broken down into three groups, 6 rats each in the control group, treatment group 200mg and 400 mg and sub divided into day 14, 28 and 48 days of exposure respectively, the rats were administered the extract ad libitum.

Sperm cell extraction and morphology assessment

The Sperm cells were extracted by sacrificing the rats, locating the vas deferens which is ligated and cut, then placed on a pertri dish, 3 drops of phosphate buffered saline was added then it was teased to allow the sperm cells diffuse out easily, a drop of the sperm cells was taken and placed on a grease free clean slide, covered with a cover slip and viewed under the microscope with the x10 and x40 objective lenses.

The slide was air dried and latter stained for 20mins with the improvised Leishmian and Eosin stain [5] and the slide was rinsed in distilled water and air dried then viewed with the x100 objective lense and x400lense for morphological abnormalities. The Abnormalities were scored in percentage primarily as abnormal and normal and later secondarily as the various observable abnormalities.

Results

The results showed a shade of abnormalities which where concentration and dose gradient depended and the duration of exposure. There was a significant difference when comparing the morphological parameters with the control and the treated groups from 14 days, 28 days and 48 days ($p<0.005$) as seen in tables 1 and 2, the secondary abnormalities with headless and tailless morphological variants seen as the highest observable abnormality when compared across the treatment groups, this was followed by Short tailed and big headed sperm cells respectively this is seen in Figure, 1, 2 and 3.

Group 2: 14 days.

Result:

1. Abnornal sperm cells, Tailless (ab), presence of red blood cells (rbc)
2. Abnormal sperm cells , tailless (ab), presence of numerous immature spermatozoa
3. Matured spermatozoa with bent neck (ab).

Group 3: (28 days)

Result:

1. Abnormal sperm cells broken neck and headless sperm cells (ab), there are numerous matured sperm cells
2. Numerous matured sperm cells, tetraozoospermia with few abnormalities seen as tailles sperm cells (ab)
3. Numerous matured sperm cells, presence of abnormal sperm cells (ab).

Group 4: (48 days)

Result:

1. Numerous Abnormal sperm cells, tailless, bent neck (ab) Presence of debris (db) might be associated with staining, there is presence of red blood cell (rbc)
2. Numerous immature sperm cells seen (im) tetraozoospermia
3. Abnormal sperm cells "tailless and short tailed" with observable presence of numerous immature sperm cells (im).

Day	Control	200 mg	400mg	P. value
14	91.67 ± 1.05	76.6 ± 2.10	65.83 ± 2.00	0.0001
28	91.67 ± 1.05	71.67 ± 1.66	62.50 ± 1.70	0.0001
48	91.67 ± 1.05	65.83 ± 2.00	60.0 ± 0.00	0.0001

Table 1: Comparative analysis of the Normal sperm cells in Adult male Wister rats orally administered *Pausinytalia johimbe* (Burantashi).

Day	Control	200mg	400mg	P. value
14	8.33 ± 1.05	23.3 ± 2.10	34.17 ± 2.00	0.0001
28	8.33 ± 1.05	28.3 ± 1.66	37.50 ± 1.70	0.0001
48	8.33 ± 1.05	34.17 ± 2.00	40.00 ± 0.00	0.0001

Table 2: Comparative analysis of the Abnormal sperm cells in Adult male Wister rats orally administered.

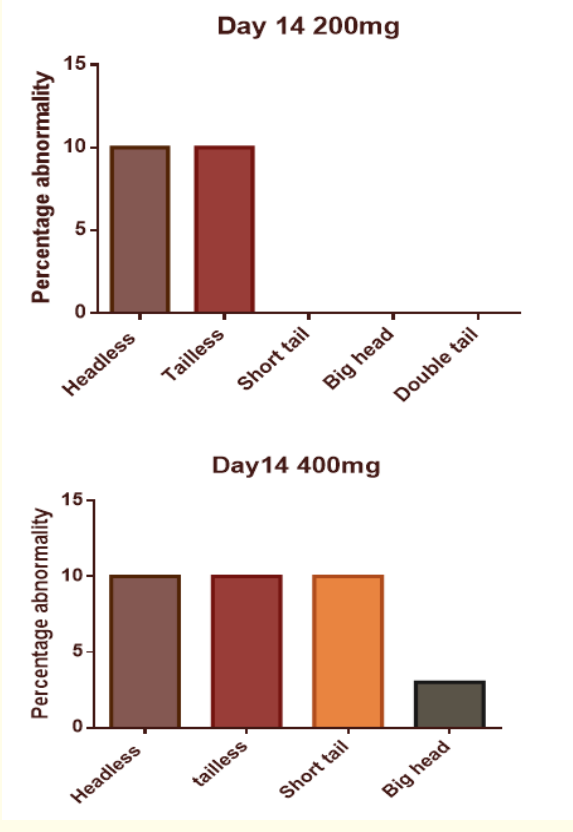

Figure 1: Showing the Comparative Abnormalities observed in adult male Wister rats orally fed with *P. johimbe* at 200mg and 400mg for 14 days.

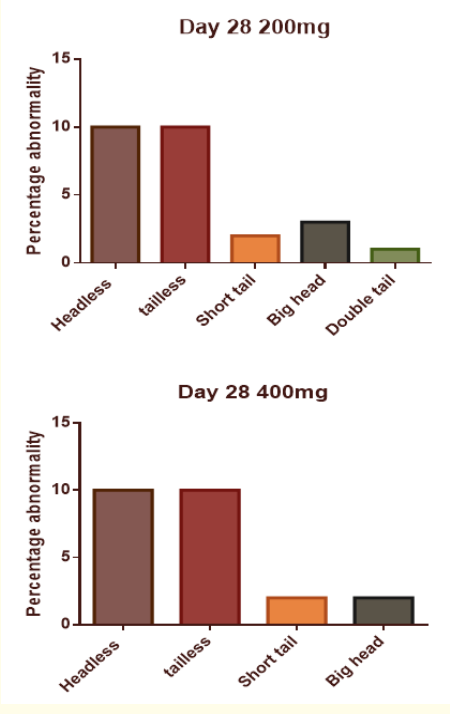

Figure 2: Showing the Comparative Abnormalities observed in adult male Wister rats orally fed with *P. johimbe* at 200mg and 400mg for 28 days.

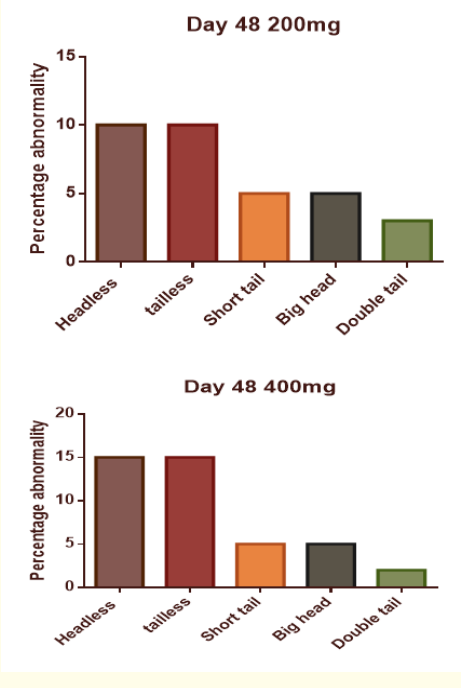

Figure 3: Showing the Comparative Abnormalities observed in adult male Wister rats orally fed with *P. johimbe* at 200mg and 400mg for 48 days.

Discussion

As compared with previous work Burantashi *P. yohimbe* may not affect the sperm cell concentration and motility at a short exposure but reports have it that it causes extensive damage to the morphology of the sperm cells as observable in this study with a steady increase of the abnormality with the increase in the concentration and duration of exposure [2].

There was observable secondary variants of shape and size as compared with the control group as also observed by previous study, with headless and tailless sperm cells with the highest abnormality this maybe be due to the pressure impacted by the local aphrodisiac and has led to dysfunction at the testicular level [6].

Conclusion

Although there seem to be no risk as it impacts on the concentration and motility of spermatozoa on the continuous usage of this local aphrodisiac but its impact on the morphology may also pose a threat on fertility as it increases the number of abnormal sperm cells per ejaculate.

Acknowledgement

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Conflict of Interest

There were no conflicts of interest during and after this study.

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