

BASELINE DONKEY-FOAL PHYSIOLOGICAL PARAMETERS (TEMPERATURE, PULSE AND RESPIRATORY RATES) IN AN INSTITUTIONAL FARM

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ABSTRACT

This study aimed to establish baseline physiological parameters specifically temperature, pulse, and respiratory rates of donkey foals as part of the mandates of Equine and Camel Research Programme at the National Animal Production Research Institute (N.A.P.R.I) in ABU Shika-Zaria. The research involved 12 colts monitored from birth up to one year of age. Measurements of vital parameters were recorded daily in the morning, yielding mean values of 36.82 ± 1.03 °C for temperature, 62.03 ± 14.73 beats per minute for pulse rate, and 32.38 ± 12.4 cycles per minute for respiratory rate. Descriptive statistical methods, including mean, standard deviation, minimum, and maximum values, were utilized to analyze the collected data using Graphpad Prism version 8.0. The findings suggest that these established physiological values should be considered alongside other reported metrics when clinicians conduct physical examinations and interpret physiological data for colts. This study contributes essential reference points for veterinary practice and enhances understanding of normal physiological ranges in this species.

Keywords: Donkey-foal, Vital parameters, Colts, Shika-Zaria.

INTRODUCTION

Disease diagnosis in animals is largely dependent on the understanding of reference physiological parameters of an apparently healthy animal whose measurement provides invaluable information concerning the health status of such an animal (Mori *et al.*, 2003; Mori *et al.*, 2004). There are several reports of such parameters which are of clinical importance from some parts of Nigeria (Umaru *et al.*, 2015) and other parts of Africa (Manyahilishal *et al.*, 2011).

In the underdeveloped countries, the donkey is mainly used as a work (draught; transport and agriculture or pack) animal (Bennett *et al.*, 2022). However, in developed countries, donkeys are kept for breeding, as pets, and for livestock protection (to guard sheep), for children's ride or tourists (Evelyn *et al.*, 2022). A few donkeys are milked or raised for meat (Hassan *et al.*, 2022). Donkey milk is used for soaps and cosmetics as well as dietary purpose (Bennett *et al.*, 2022).

As the donkey is currently a critically endangered species (Navas *et al.*, 2017), the Nigerian government mandated NAPRI with the task of donkey production while the national legislature has presently illegalised the export of both donkey and its skin from Nigeria. This study will provide a baseline physiological parameter (temperature, pulse and respiratory rates) of clinical importance as specific reference for donkey foals in addition to other reported values for the clinicians, academic/ research communities worldwide.

MATERIALS AND METHODS

Study location

The research was carried out in the beef experimental unit belonging to the National Animal Production Research Institute (NAPRI), located in Shika between latitude 11°12'N and longitude 7°33'E, Kaduna state, located in the Northern Guinea Savannah zone of Nigeria and 610 meters above sea level. The climate is sub humid. Mean annual rainfall and temperature recorded at Samaru, 10km from Shika, were 1107 mm and 24.4°C respectively. The seasonal distribution of rainfall is approximately 0.1% in the late dry season (January—April), 25.8% in the early wet season (May—June), 69.6% in the late wet dry season (July—September) and 4.5% in the early dry season (October to December).

Study Animals

A total of 12 colts from birth were sampled for a year period. The daily forage intake of the colts was 1.5% of their body weight in hay per day. Water was provided *ad libitum*.

Data collection

Vital parameters (temperature, pulse and respiratory rates) were taken on daily basis in the morning. Temperature was taken by inserting a digital thermometer into the rectum at an angle of 45° until the temperature stabilises and the reading recorded in degree Celsius (°C). The pulse rate was taken by putting a finger on the coccygeal artery just at the base of the tail and recorded as beats/minute. The respiratory rate was taken by holding a tiny thread in front of nostrils and counted and recorded as cycles/minute.

Data analysis

The obtained data were analysed using descriptive statistics; mean, standard deviation and minimum and maximum for all parameters and presented in tables. Analysis was done using Graphpad Prism Version 8.0 (GraphPad Software, San Diego, CA, USA).

RESULTS

The mean values for the colts' vital parameters were; Temperature (°C) as 36.82 ± 1.03 , Pulse (beats/minute) 62.03 ± 14.73 and respiratory rate (cycles/minute) 32.38 ± 12.4 as shown in Table 1. However, the maximum, minimum and range values of baseline vital parameters of colts are presented in table 2.

Table 1: Mean baseline vital parameters of colts in the National Animal Production Research Institute Shika- Zaria Kaduna State Nigeria

Parameter	Mean± SD	Unit
Temperature	36.82 ± 1.03	°C
Pulse	62.03 ± 14.73	Beats/minute
Respiratory rate	32.38 ± 12.41	Cycles/minute

Standard deviation (SD)

Table 2: Maximum, minimum and range values of baseline vital parameters of colts in the National Animal Production Research Institute Shika- Zaria Kaduna State Nigeria

Parameter	Maximum	Minimum	Range	Unit
Temperature	39.9	31.4	8.5	°C
Pulse	120	20	100	Beats/minute
Respiratory rate	80	10	70	Cycles/minute

DISCUSSION

The mean values of physiological parameters obtained in this study for rectal temperature of 36.82 ± 1.03 (°C) agrees with findings of 37 ± 1 (°C) by Umaru *et al.*, (2015) from Nigeria, but contrary 62.03 ± 14.73 Beats/minute and 62.03 ± 14.73 cycles/minute in the values of pulse and respiratory rates 38 ± 6 and 19 ± 6 , respectively as reported earlier.

Manyahilishal *et al.*, (2011) from Ethiopia reported 37.90 ± 0.74 °C for rectal temperature and 55.40 ± 9.93 Beats/minute for pulse rate of donkey foals in which both values agreed with the findings of this research but contrary (55.40 ± 9.93 breaths/ minute) in the values of respiratory rate (28.7 ± 8.18 breaths/ minute) as reported earlier. This study was unable to compare male and female foals in the values of vital parameters because all the foals during the period of conducting this research were colts.

CONCLUSION

This study successfully established baseline physiological parameters for donkey foals at N.A.P.R.I., providing valuable reference points for veterinary practice. The baseline colts' physiological parameters were temperature (°C) 36.82 ± 1.03 , Pulse (beats/minutes) 62.03 ± 14.73 and respiratory rate (cycles/minute) 32.38 ± 12.4 . The findings emphasize the importance of considering these established values alongside other reported metrics when conducting physical examinations and interpreting physiological data in clinical settings.

RECOMMENDATION

This study recommends for the consideration of the mentioned values as reference in making physical clinical examination and interpreting physiological parameters on donkey- foals by the clinicians. Future research should aim to expand upon these findings for the filly. In addition, more research should explore how different environmental conditions and management practices may influence these physiological parameters over time.

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