

# **Preliminary investigation of Fur Breeder's assumptions regarding normal vital signs in the *Chinchilla chinchilla*.**

## **Introduction and statement of the problem**

Since 1932 the Chinchilla has been farmed in the United States primarily as livestock for its fur properties. Since the 1950's the fur industry has printed books on how to raise chinchillas for their fur, producing books and notebooks essentially for the fur industry. There was also a journal printed by the breeders group with information on chinchilla breeding. This literature has been primarily anecdotal based upon experience of the breeders. Much of this information has not been published in scientific journals nor validated by scientific research.

In the past twenty years, the chinchilla has become increasingly popular as a pet animal. This population of owners has resorted more frequently to veterinary assistance when their animals have become sick. The paucity of good researched health information and therefore of scientific clinical information about this animal has been a detriment to the veterinarian's care of the animals.

## **Review of the Literature**

The journal literature of the breeding association has primarily been lost. Of the present literature found, Boersma<sup>1</sup> gives the average daily core temperature of a chinchilla as 36.36° Celsius [97° F] to 38.31° C [100° F]. Jenkins<sup>4</sup> gives the temperature of a chinchilla as between 98.5-100.4° F, and the pulse rate as 100 beats per minute. The extant books on chinchilla health give the temperature variously as 98.6° Fahrenheit (Zeinart<sup>7</sup> p. 66, Harris<sup>2</sup>, p. 57) or as a range between 97° to 100 F (Houston & Prestwich<sup>3</sup> p. 92, Thompson<sup>6</sup> p.I-3). Kraft<sup>5</sup> on the other hand states that the temperature differs between males and females and puts male temperature at 35.8°

Celsius (96.4° F) and the female temperature at 35.4° C (97.5°<sup>1</sup>F) and with a total variation from 36-38° degrees Celsius (98-100° F) [p 134]. No other information on heart and no respiration data was found.

### **Method and population**

In a series of free clinics we gave a number of chinchillas a free health examination. All the animals which came in to the clinic were of good health, with the exception of a few giardia cases and some heart murmurs which were discovered in the examination by the veterinarian. A full physical exam was given with measurements of vital signs, girth, length, history, and diet. The veterinarian who was in charge of the clinic day also checked the general health of the animals, did stool wet mounts for common parasites, and obtained some urine for urinalysis. A total of 91 animals ranging from a few months old to around 11 years old were seen over four clinic days. One animal was dropped from the study due to no information obtained from the animal other than heart murmur check. Babies under 6 months old were also dropped so that full grown adults would only be used for the information. A study of young chinchillas under 400 gm will be done as a separate study.

The temperature was obtained rectally with a small digital thermometer. The pulse and respirations were obtained using a stethoscope and auscultating for apical pulse and respiratory sounds. The pulse and respirations were taken for 30 seconds each and amounts doubled, because the animals were very nervous and difficult to keep quiet enough for good auscultation for a full minute.

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<sup>1</sup>Kraft text seems to transpose the numbers for the Fahrenheit temperature, which should be 95.7° F.

## Findings

In a population of 82 animals, the rectal temperature ranged from 98.5-104.2° F with an average of 101.1° plus or minus 1.19°. Two animals were not measured for temperature as they were females that were possibly pregnant. Females in early pregnancy are reported to lose the pregnancy if stressed too much.

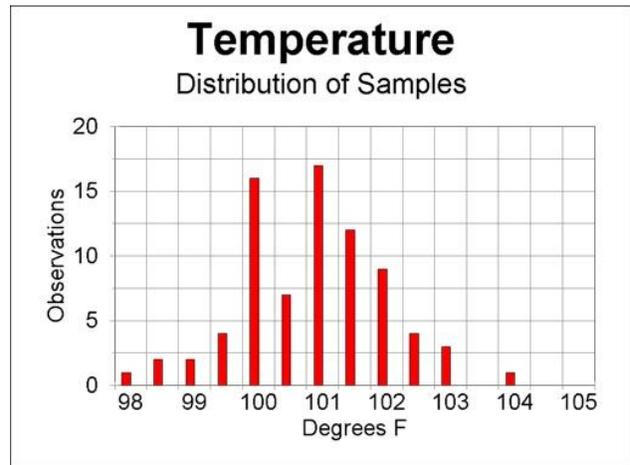


Figure 1

Therefore, minimal vital signs were done and they were then examined by the on sight veterinarian. The central tendency measurements indicate that a normal temperature would be between 100 and 101° F [38-38.5° C] (see Figure 1). Figure 4 attempts to see if there was a differentiation in temperature of the 82 animals in the study, of which 51 were male and 31 were female [minus the 2 that were not done for temperature]. The males' temperature averaged 100.85°F with a standard deviation of .96°F, whereas the females' temperature averaged 101.52°F with a standard deviation of 1.42°F. (Fig. 1)

In a population of 82 animals the pulse was found to average 157 beats per minute with a standard deviation of 39. The fastest heart beat was 300, and the slowest was 98 (see Figure 2). The modality of the pulses indicates that the pulse ranges around 120-130 under clinical conditions. (Fig.2) Distributions on

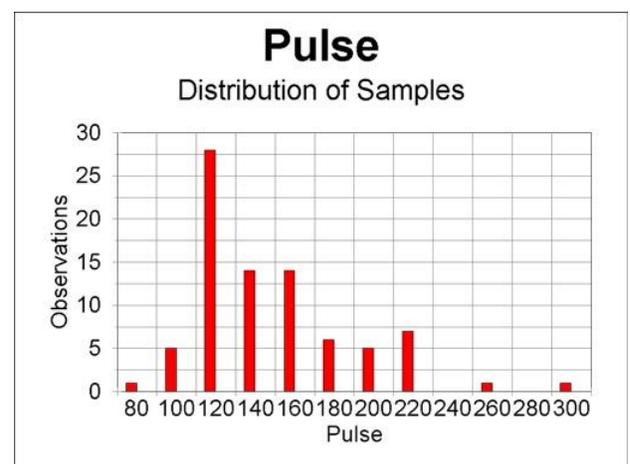
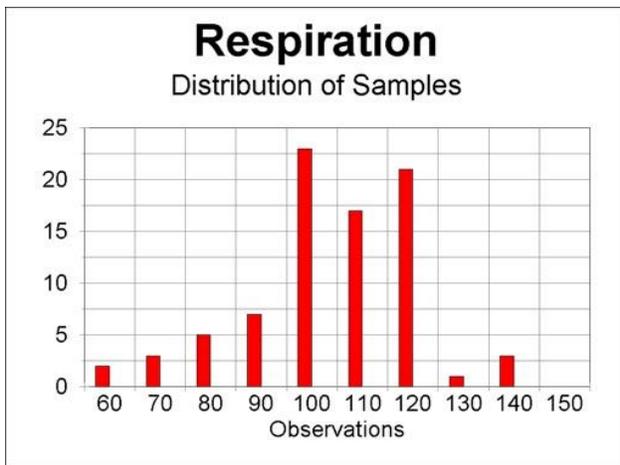


Figure 2

pulses were very wide, so that a norm for pulse needs further investigation. Figure 5 shows that, of the 82 animals in the study, 51 males and 31 females, males' pulse averaged 150.9 with standard deviation 38.6, whereas females' pulse averaged 167.7 with standard deviation 39.6. In this small a population, no real determination of differences can be inferred. Within this sample all that can be said about differences in pulse rate between males and females is that under these test conditions, females have a slightly higher pulse rate than males.



The average respiration was 107.5 and had a standard deviation of 16.6. The respirations ranged from a high of 143 and a low of 60 (see Figure 3).

Figure 3

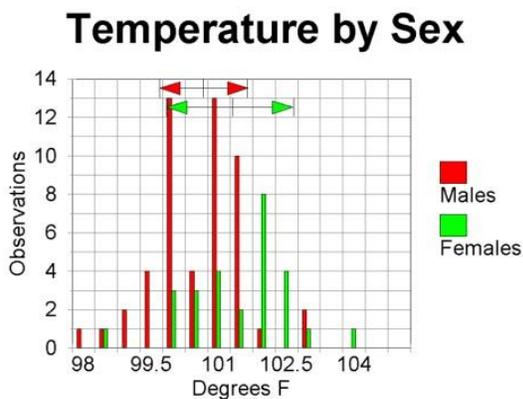


Figure 4

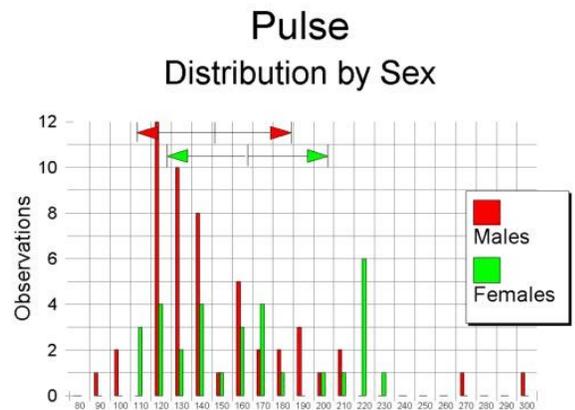


Figure 5

## **Discussion and Summary**

In such a small population of animals, no statistical significance can be really said to exist. The large standard deviation in the pulse rates indicates more studies have to be completed before these numbers can be taken as criterion. The high respirations and pulses could be due to the strange environment for the chinchillas. Chinchillas are, as a rule, animals who are very easily frightened, and as small mammals will, their heart rate and breathing rate increases under new and frightening situations. Boersma<sup>1</sup> indicates that rectal temperatures measured rectally are below the core body temperature found in their study, and that rectal temps may be false indicators of the animal's core temperature. They also indicate that circadian rhythms have a large bearing upon body temperature in the chinchilla. The temperature difference could also be due to stressful conditions of examination. However, since most of these animal would probably be seen under the same type of conditions, it could be allowable for the vital signs to be standardized under these type of stressful conditions. We recommend that further studies be done in other locations with larger populations of animals before these numbers be considered as standard. We further recommend that further study needs to be done on chinchillas regarding whether or not temperature is a good indication of illness in these animals, or if other parameters give a better indicator of illness.

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