The comportment, morphology and body growth of the juvenile specimen of the herbivorous lizard *Uromastyx aegyptius microlepis*

Soussia Lotfi , Krouma Abdelmajid

College of Sciences and Arts in the Al-Rass Province, Qassim University, BP 53, 51921. Saudi Arabia.
abdelmajid.krouma@gmail.com

Abstract: We assessed the behaviour and the growth of five body homogen and juvenile specimen of *Uromastyx aegptius* for 17 days. Daily observations were made and weekly measurements were collected. Obtained results showed that the studied spiny tailed lizard increase his body mass and length during the period of high temperature and continue to consume food. When the winter weather become and temperature decreased considerably Animal stop food consumption and start to lose body mass. As for some reptile, the high temperature and direct sunlight change the skin colour of *Uromastyx aegyptius*.
[Soussia Lotfi, Krouma Abdelmajid. **The comportment, morphology and body growth of the juvenile specimen of the herbivorous lizard *Uromastyx aegyptius microlepis*.** *Life Sci J* 2014;11(5):234-237]. (ISSN:1097-8135). http://www.lifesciencesite.com. 31

Keywords: *Uromastyx aegyptius*; body mass; body length; tail length; skin color

1. Introduction

The *Uromastyx aegyptius*, aspiny- tailed lizard, have become more popular during the last few years. Unfortunately there is little known about the genus. According to the most recent taxonomic reviews of the entire genus Uromastyx 16 valid species are currently accepted (Wilms, 2001, 2005; Wilms and Schmitz, 2007), of which 6 are known to occur on the Arabian Peninsula (Wilms et al., 2010). hese lizards are adapted to arid regions and are found from north-western India throughout south-western Asia and the Arabian Peninsula to the Sahara of Africa. Members of this genus are referred to as dab lizards or spiny tailed lizards. There are six species (*U. aegyptius, U. ornatus, U. ocellatus, U. acanthinurus, U. hardwicki,* and *U. benti*). *Uromastyx aegyptius* is the largest member of the genus with individuals reaching 30 inches or more in total length and weighing several pounds. The other species are usually less than 14 inches in total length. Coloration is variable between and within species. *Uromastyx aegyptius* and *Uromastyx hardwicki* are usually dark to light brown. *Uromastyx acanthinurus* can be yellow, green, bright orange or a combination of these colours. *Uromastyx ornatus* are sexually dimorphic with adult males being green or blue green with blotches of yellows and oranges. Females have more subtle yellows, browns, and some orange. These interesting lizards have become more popular during the last few years. Unfortunately there is little known about the genus. They are considered to be specialized herbivores (Foley et al., 1992; Herrel and De Vree, 2009). Other preliminary studies suggest that some species of *Uromastyx* consumes insects, lizards and other food sources in both the field and laboratory (Kevork and Al-Uthman, 1972; Robinson, 1995; Cunningham, 2000).

The present study analyzes the comportment and the growth of five homogen and juvenile genus of *Uromastyx aegyptius microlepis* during 17 weeks arranged into two periods, the first one (8 weeks) coincide with the last weeks of summer in which temperature continue to be high, and the second one (9 weeks) coincide with a clear winter weather.

2. Material and Methods

Experiments were conducted on five juvenile specimens of *Uromastyx ornata ornata* with body mass about 100 g. These lizards were collected in the Al-Rass Province- Qassim- Saudi Arabia and had been kept in the Laboratory for 17 weeks on a diet of vegetables and fruit from October 2013 to January 2014. Burrow form and orientation was also studied.

The following data were weekly recorded: total weight, total length, tail length and number of tail whorls. Other parameters were daily collected like animal color, food consumption and faeces apparition. Sometimes the animal was exposed directly to the sunlight for one hour in the afternoon to check the skin color variation. The structure of the ventral face of the tail was also analyzed.

3. Results and discussion

During the first period of the experience *Uromastyx* continue to consume food with a clear increase in the total weight reaching the maximum after 8 weeks (fig 1). After then, the animal stops food consumption and start to lose weight until week 17. During this period no faeces was observed. These results can be explained by the changes in the ambient temperature. In fact, in the first period of the

experience (October- November), the temperature is high and animal continue to express spring activity. In the second period of the experience (November-December), the temperature become low and reach 6°C. The animal express winter activity and prefer hibernation. In accordance with our results, Wilms et al., (2009) demonstrated that a significant differences exist in body mass between seasons, but not regarding to the sex of 62 *Uromastyx* specimens studied. The differences in temporal patterns of activity, the use of space, and body temperature relationships are not independent. Many lizards behaviorally regulate body temperatures by shutting between sun and shade or hot and cold microenvironments to alter heat flux, by modifying posture to alter surface areas exposed to heat sources or sinks, and by regulating activity times (Huey, 1974; Pianka, 1986).

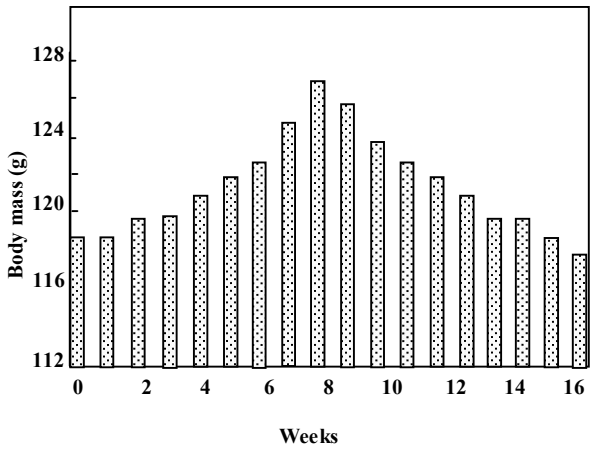

Figure 1. Body mass of a juvenile specimen of *Uromastyx aegyptius* maintained in the laboratory during 17 weeks and fed with local herb. Means of 5 specimens.

Animal length increase progressively during the experience even if food consumption was stopped (fig 2). The total increase was estimated to 3 cm in 17 weeks.

Tail length show the same behaviour than total length with a clear increase adding 2 cm (from a total of 3 cm) to the animal after 17 weeks (fig 3). This result can be explained by the fact that animal growth and cell metabolism are vital and continuous activities. The fact that animal don't consume food for a period can explain the low energy produced and allocated especially to the tail during this period. This can explain the high part of the tail length (2 cm) from the total animal length (3 cm).

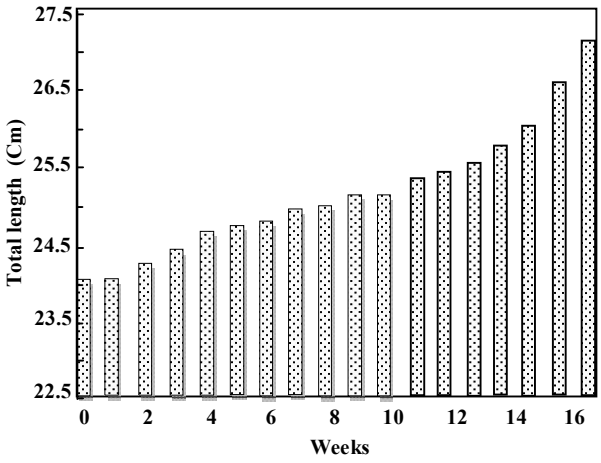

Figure 2. evolution of the Body length of a juvenile specimen of *Uromastyx aegyptius* maintained in the laboratory during 17 weeks and fed with local herb. Means of 5 specimens.

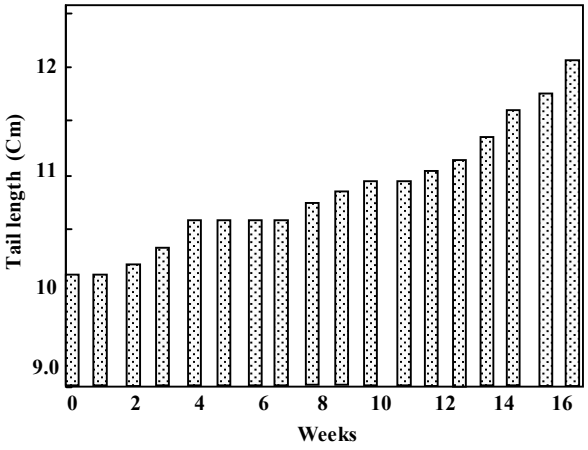

Figure 3. evolution of the tail length of a juvenile specimen of *Uromastyx aegyptius* maintained in the laboratory during 17 weeks and fed with local herb. Means of 5 specimens.

When captured and during his stay in the laboratory *Uromastyx* colour was black with small white dots (fig 4), but when exposed for one hour to the direct sunlight the skin colour change to yellow with dark spot (fig 5). Like many reptiles, these lizards' colours change according to the temperature; during cool weather they appear dull and dark but the colours become lighter in warm weather, especially when basking; the darker pigmentation allows their skin to absorb sunlight more effectively. In warm months the activity of lizards is distinctly bimodal, whereas in colder months lizards are most active at noon, when the temperature is highest. Reptiles can avoid harmful solar radiation by exhibiting certain coloration (Disi 1993). Global warming and ozone

depletion are associated with increases in both temperature and ultraviolet solar radiation (UV). Although UV-B radiation constitutes only about 0.5% of the total solar radiation reaching the Earth's surface, it has high potential to cause biological damage because the high-energy wavelength can be absorbed by nucleic acids and proteins of living organisms (Ovaska 1997). The absolute levels of solar UV-B increases with altitude and thus will be greater at high-elevation. Intensive UV exposure in the laboratory can result in embryonic mortality and abnormal development.

Figure 4. photo of a juvenile specimen of *Uromastyx aegyptius* placed in the Laboratory

Figure 5. photo of a juvenile specimen of *Uromastyx aegyptius* placed in the direct sunlight during 1 hour.

The ventral face of the tail show a succession of 21 whorls with different lines of scales. The first three whorl contains just one line of scales, from the fourth to the eighth whorls we observed the apparition of a second line in which the number of scales increase progressively: 1scale for the 4th whorl, 2 scales for the 5th whorl, 4 scales for the 6th whorl, 6 scales for the 7th whorl and 8 scales for the 8th whorls . For the 9th, 10th and 11th whorls it appears a second line of scales. From the 12th to the 18th whorls a third line of scales was observed and for the 19th, 20th and 21th whorls a fourth line of scales appears. The number of scales in each new line increase progressively. Wilms and Bohme (2007) confirmed the existence of 20- 23 tail whorls in uromastyx ornate, scalation homogenous without enlarged tubercular scales on head, neck and back.

Burrows of *Uromastyx aegyptius microlepis* are typically characterized by a perimeter wall around the burrow entrance, which consists of soil excavated by the animal inhabiting the burrow. Nevertheless, burrow openings were mainly aligned to the south and east. In fact, during summer, temperature consistently reach 40°C to 47°C between 10h and 16h.. North and west facing burrow entrances would be hotter than burrow facing in the other directions, especially during midday (Cunningham, 2001).

In the present study, we examined the comportment of a juvenile genus of *Uromastyx ornata* in the laboratory during 17 weeks. Obtained results demonstrates that this spainy-tailed lizard responds to the hibernation period by stopping food consumption even if there is. no faeces output during animal hibernation observed confirming the entrance of the lizard in a slow life conserving just the vital functions. The experiment was again ongoing in order to understand seasonal behaviour of the animal in connection with food availability and body mass.

Acknowledgements:

Authors are grateful to the Deanship of Scientific Research, qassim University, for financial support to carry out this work (Project N°. SR – D - 013)

Corresponding Author:
Dr. Krouma abdelmajid
College of Sciences and Arts in the Al-Rass Province
Qassim University, BP 53, 51921. Saudi Arabia.
E-mail: abdelmajid.krouma@gmail.com

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3/11/2014