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## Studies on Period of Oviposition and Hatching of Eggs in *Hyalomma anatolicum anatolicum*

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### Abstract

The engorged *Hyalomma anatolicum anatolicum* females were collected from healthy cattle of college farm as well as nearby private dairy farms and villages of Mhow to evaluate the period of oviposition and hatching of eggs of *H. a. anatolicum* under laboratory conditions. The present study recorded the period of oviposition and hatching of eggs (Mean ± SE) as 9.4 ± 0.54 and 21.9 ± 0.69 days, respectively.

### Introduction

*Hyalomma anatolicum anatolicum* is a widely distributed multi-host tick infesting cattle, buffaloes, sheep and goats responsible for transmitting *Theileria annulata*, *T. buffeli* and *T. lestoquardi* (*T. hirci*) in India (Ghosh and Azhahianambi, 2007). Depending on atmospheric conditions, variation is observed in period of oviposition and hatching of eggs. The period of oviposition and hatching of eggs varies upon

acaricide application and using anti-tick vaccine. Hence, owing to scanty literature pertaining to *Hyalomma anatolicum anatolicum* compared to *Rhipicephalus (Boophilus) microplus*. The present study was designed to know the normal of period oviposition and hatching of eggs in case of *H. a. anatolicum*.

### Materials and Methods

Engorged *H. a. anatolicum* females dropped from healthy cattle were collected from the

College farm as well as private dairy farms and villages in and around Mhow. The collected ticks were processed for preparing permanent slides as per the method described by Bhatia *et al.* (2010) for their morphological identification. The male and female ticks were identified based on the characters described by Geeverghese and Dhanda (1987). The engorged live female ticks were identified based on the longirostrate mouth parts, first coxa with two equal spurs, longer than wide scutum with a narrowly rounded posterior margin. The males were identified based on the characters like, small elongated body, elongate adanal shields, subanal shields situated away from the mid axis. Further, the collected live ticks were observed under stereoscope and based on long mouth parts and first coxa with two equal spurs, subsequently each engorged female *H. a. anatolicum* was placed in a test tube and was closed with a piece of cloth and rubber band. These tubes were transferred in a desiccator having saturated potassium hydroxide solution at the base to maintain 80-85% relative humidity (Solomon, 1951). After closing the desiccator, it was placed in an incubator at 28±1°C and 85±5% relative humidity (RH). The tubes were examined periodically to check laying of eggs and after completion of the oviposition, the dead females were removed from the glass tubes in order to avoid the fungal growth on the dead ticks and subsequent contamination of the eggs and freshly laid eggs were kept in BOD incubator at 28±1°C and 85±5% RH in order to record the period of hatching of eggs.

## Results and Discussion

### Period of Oviposition

The present study recorded the period of oviposition (Mean ± S.E.) as 9.4 ± 0.54 days at temperature of 28 ± 1°C and 85 ± 5% relative humidity. These findings are in agreement with the findings of Bagherwal and Sisodia (1989), as they have reported the oviposition period as 7 – 11 days in case of *H. a. anatolicum* at a temperature of 29°C and a relative humidity of 85%. Further, Ghosh and Azhahianambi (2007) also recorded oviposition period as 10 - 12.2 days at a temperature of 28°C and 85% relative humidity. Durrani and Shakoori (2009) also reported the oviposition period as 8 – 10 days at 30°C and 85 ± 5 % relative humidity. Anusha

(2014) recorded oviposition period of *H. a. anatolicum* as 10 - 12 days at 35 - 38°C and 85% relative humidity.

### Period of hatching of eggs

The current study recorded the period of hatching of eggs (Mean ± S.E.) as 21.9 ± 0.69 days at 28 ± 1°C and 85 ± 5% relative humidity, which is in line with the findings of Bagherwal and Sisodia (1989) who reported the period of hatching as 18 - 29 days. Similarly, Durrani and Shakoori (2009) recorded period of hatching as 15 - 25 days during spring season in Pakistan.

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### Conflict of Interest

All authors declare that there is no conflict of interest amongst us.

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