

SHORT COMMUNICATION

Study on Oviposition and Hatching Period in *Rhipicephalus (Boophilus) Microplus* (Acari: Ixodidae) under Laboratory Conditions

Ritika Singh^{1*}, RK Bagherwal², AK Jayraw³, Nidhi S Choudhary⁴, Md. Akil⁵

Ind J of Vet Sci and Biotech (2019): 10.21887/ijvsbt.15.1.15

Ticks are highly specialized distributed worldwide obligate hematophagous ectoparasites of mammals, birds, and reptiles. Amongst the species of ticks infecting cattle in India, *Rhipicephalus microplus* is the most widely distributed tick and established as the principal vectors of pathogens like *Babesia* and *Anaplasma* species (Ghosh and Nagar, 2014). Changes in the ovipositional and hatching pattern of these parasites are observed depending on the atmospheric conditions. Several extrinsic factors such as rainfall, temperature, humidity, floods, winds and physical damage affect the successful reproductive performance and survival of ixodid ticks after detachment from their hosts (Dipeolu, 1984). This study was aimed to evaluate the period of oviposition and hatching of eggs in engorged female ticks *R.(B.) microplus* collected from cattle in and around Indore.

MATERIALS AND METHODS

Fully engorged adult female *R.(B.) microplus* were collected by handpicking from infested cattle and reared individually at the laboratory of Department of Parasitology. Ticks were identified using morphological features as described by Soulsby (1982). Each engorged female tick, after identification, was placed in a test tube and covered with a piece of muslin cloth and rubber band. These tubes were transferred in a desiccator having saturated potassium hydroxide solution (KOH) at the base to maintain 80–85% relative humidity (Solomon, 1951). After closing the desiccator, it was placed in an incubator at $28 \pm 1^\circ\text{C}$ and $85 \pm 5\%$ 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 to avoid the fungal growth on the dead ticks and subsequent contamination of the eggs. The freshly laid eggs were kept in BOD incubator at $28 \pm 1^\circ\text{C}$ and relative humidity of $85 \pm 5\%$ to record the hatching period of eggs.

RESULTS AND DISCUSSION

In the present study, the periods of oviposition and hatching of eggs of *Rhipicephalus microplus* were recorded as 8.4 ± 0.37 and 21.5 ± 0.43 days, respectively, at the temperature

^{1,2,4,5}Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Mhow, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh, India

³Department of Veterinary Parasitology, College of Veterinary Science and Animal Husbandry, Mhow, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh, India

Corresponding Author: Ritika Singh, Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Mhow, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh, India, e-mail: ritikasingh1202@gmail.com

How to cite this article: Singh, R., Bagherwal, R.K., Jayraw, A.K., Choudhary, N.S., & Akil, M. (2019). Study on Oviposition and Hatching Period in *Rhipicephalus (Boophilus) Microplus* (Acari: Ixodidae) under Laboratory Conditions. *Ind J Vet Sci and Biotech*, 15(1):65-66.

Source of support: Nil

Conflict of interest: None

Submitted: 16/7/2019 **Accepted:** 23/7/2019 **Published:** 27/7/2019

of $28 \pm 1^\circ\text{C}$ and relative humidity of $85 \pm 5\%$. These observations were in agreement with Senbil *et al.* (2018), who recorded the oviposition and hatching period of *R. microplus* as 8.6 ± 0.85 and 21.03 ± 2.99 days, respectively, under laboratory conditions of $28 \pm 3^\circ\text{C}$ temperature and relative humidity of $80 \pm 5\%$ using rabbit as experimental hosts. Saha *et al.* (1999) studied the seasonal effect on the ovipositional biology of *Boophilus microplus* and reported the oviposition period to vary from 5–22 days in June and July and 8–27 days in January.

On the other hand, Hadi (2015) recorded the oviposition and pre-hatching periods of *Rhipicephalus sanguineus* ticks of dogs as 14.3 days (9–19 days) and 6.9 days (1–17 days), respectively, under laboratory conditions at $25\text{--}27^\circ\text{C}$ temperature and relative humidity of 80–90%.

ACKNOWLEDGMENT

Authors are thankful to the Vice-Chancellor, NDVSU, Jabalpur and Dean, College of Veterinary Science and Animal Husbandry, Mhow for extending the facilities to conduct this research work.

REFERENCES

- Dipeolu, O.O. (1984). "Studies on ticks of veterinary importance in Nigeria. VII. The comparison of some aspects of bionomics of *Boophilus decoloratus* and *Boophilus geigy*. Tropical Veterinarian, 2: 22-32.
- Ghosh, S. and Nagar, G. (2014). Problem of ticks and tick-borne diseases in India with special emphasis on progress in tick control research: A review. J. Vector Borne Dis., 51:259-270.
- Hadi, U.K. (2015). Fecundity, oviposition and egg incubation period of female *Rhipicephalus sanguineus* Latreille (Acari: Ixodidae) ticks in Indonesia. J Vet Med Res, 2(5):1-4.
- Saha, A., Chel, G. and Ghosh, D. (1999). Ovipositional biology of *Boophilus microplus* Canestrini (Acari: Ixodidae). Uttar Pradesh Journal of Zoology, 19(1): 31-38.
- Senbill, H. Hazarika, L.K., Baruah, A., Borah, D.K., Bhattacharyya, B. and Rahman, S. (2018). Life cycle of the southern cattle tick, *Rhipicephalus (Boophilus) microplus* Canestrini 1888 (Acari: Ixodidae) under laboratory conditions. Syst. & Appl. Acarology, 23(6): 1169-1179.
- Soulsby, E.J.L. (1982). Helminths, Arthropods and Protozoa of Domesticated Animals. 7th Edn. Bailliere Tindall, London, UK, pp 458-471.

Announcement: SVSBT-2019

VII Annual Convention and National Seminar of SVSBT

The VII Annual Convention of the Society for Veterinary Science & Biotechnology (SVSBT) and **National Seminar on "Biotechnological Advances for Improving Animal Health and Productivity"** will be **organized at Navsari during 5-6 December, 2019** by the College of Veterinary Science & Animal Husbandry, Navsari Agricultural University, Navsari, Gujarat. The organizing committee of **SVSBT-2019 invites abstracts** of original and quality research work limited to 250 words by e-mail to svsbt2019@gmail.com latest **by 15th November, 2019**. Details of Seminar will be available on website nau.in. **For Further details, please contact:**

Dr. B. P. Brahmshtri

Organizing Secretary cum Professor & Head
Department of Animal Biotechnology

College of Veterinary Science & Animal Husbandry
Navsari Agricultural University, Navsari – 396450 (Gujarat)

E-mail: svsbt2019@gmail.com; mobile +91 94273 86685

