

**Short Communication****One-Humped Camels (*Camelus dromedaries*) Hard Ticks Infestation in Qeshm Island, Iran**

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**Abstract**

The economic importance of tick infestation on camels are important as they are important meat and milk producer animals in the less vegetation area of Iran and their health and production are greatly affected by the high tick infestation. In this investigation, tick infestations on camels (*Camelus dromedarius*) were determined in Qeshm Island, Iran. A total number of 912 adult ticks (472 males and 440 females) were collected and identified. *Hyalomma dromedarii* was the predominant tick species and accounted for 61.9% of the adult ticks. Other hard ticks were *H. anatolicum excavatum* (22 %), *H. asiaticum asiaticum* (14.2 %), *H. marginatum* (1.9 %), *H. impeltatum* (0.4 %) and *Rhipicephalus bursa* (0.4 %). In conclusion, The provision of tick control programs in the Qeshm Island would seem a prerequisite for improving camel meat and milk production.

**Key words:** Tick, *Camelus dromedarius*, Qeshm Island

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## Introduction

Economic loss caused by ticks and the risk of fatal human tick-borne viral disease has stimulated research in ectoparasite control. It has been suggested that heavy tick infestations in camels can cause calf mortality and reduce growth rates.<sup>1</sup>

Relatively little information is available on the role of hard ticks (Acari: Ixodidae) as disease vectors in camels.<sup>2</sup> Generally, owners who usually take measures to reduce infestation, recognize damage caused by ticks. These measures can vary from manual removing of ticks on camels to the application of acaricides or topical application of used machine-oil.<sup>2,3</sup> It has been suggested that heavy tick infestations in a camel herd in Kenya contributed to reduced growth rates and higher calf mortality in comparison with other herds in Kenya where tick control programs were adopted.<sup>1</sup>

There is no information on ticks infesting domestic animals in Qeshm Island. Qeshm Island is located a few kilometers off the southern coast of Iran, opposite the port cities of Bandar Abbas and Bandar Khamir. The island has an area of 1491 square kilometers (Fig. 1). The average temperature on the island is approximately 27 °C, with the warmest and coldest months between June-August and October-January, respectively. The average rainfall is 183.2 mm. Of the vegetation on the island, one can mention the mangrove forest on the northern shores of the island in the Laft and Tabl districts, halophyte plant associations and psamophyte-halophyte vegetation on the eroded terraces and the dry woodlands (Fig. 1). Classification based on biological types indicates that the therophytes and chamaephytes make up the largest percentage of the plants. The largest families are the *Gramineae* (*Poaceae*), *Papilionaceae*, *Compositae* (*Asteraceae*) and *Chenopodiaceae*.<sup>4</sup> The camel (*Camelus dromedaries*) is the largest

majority of the population of domestic animal on Qeshm Island. Female camels are mainly used for breeding. Camels on this island are used for their products (meat, milk, and hair) and exported to the neighboring Arab countries. There is no information on ticks infesting camels in the Qeshm Island; therefore, the objective of the present study was the determination of tick infestations on camels (*C. dromedarius*) in Qeshm Island, Iran.

## Materials and Methods

In this study, ticks were collected from camels on Qeshm Island, Iran. The ticks were counted and identified to determine infestation and distribution of ixodid ticks in the region. The camels included in the study did not belong to the same herd.

Tick collections from one-hundred adult dromedary camels (*Camelus dromedaries*) were carried out in five different times. No tick control program is undertaken in the Island, but owners occasionally treat infested camels using acaricidal powder or ivermectin injection and sometimes they remove them manually. The ticks were preserved in 70% ethanol and examined under a binocular microscope. They were identified using the identification key according to Hoogstraal *et al.* (1981).<sup>5</sup> The ticks were stored in cotton-plugged vials and placed in an incubator at 27°C, with a relative humidity of 85% for further processing.

## Results & Discussion

During the study, 912 ticks (472 males and 440 females) from 100 female camels were collected and identified. Most of the ticks belonged to the genus *Hyalomma*. Of those *H. dromedarii* (61.9 %) was the predominant specie followed by *H. anatolicum excavatum* (22 %), *H. asiaticum asiaticum* (14.2 %), *H. marginatum* (1.9 %), *H. impeltatum* (0.4 %) and *Ripicephalus bursa* (0.4 %). A

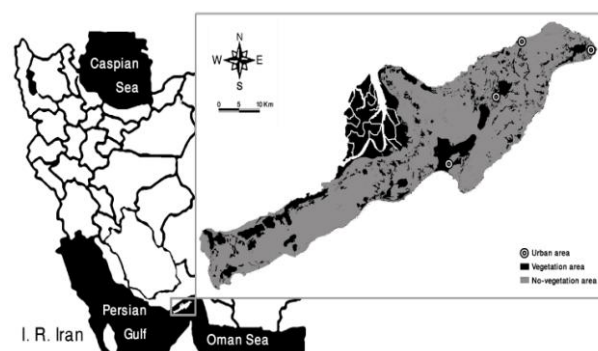
total number of 517 fed and 395 unfed hard ticks were removed. Mean of the removed ticks per animal was nine. Predilection sites for adult ticks were axilla (36 %), groin (20 %), interdigital cleft (14 %), genital area (12 %), anus (10 %), tail-brush (4 %) and ears (4 %).

The relative proportions of male and female ticks found in this study (1.86:1) corresponded to those found by Dolan *et al.* (1983).<sup>6</sup> Some camel ticks' infestation have been reported to efficiently transmit diseases of veterinary importance.<sup>2,3</sup> Ticks in camels transmit *Theileria camelensis* and *Anaplasma marginale*.<sup>7</sup>

In this study, *H. dromedarii* was the most abundant tick specie. This tick species is distributed throughout the world wherever camels are present, in southern Russia, in the Far, Middle and Near East, in North Africa and south of the great northern deserts down to Somalilands and northeastern Kenya.<sup>8</sup> It represents nearly 90 % of ticks infesting camels.<sup>2,9-11</sup> Adult *H. dromedarii* infest chiefly camels, but cattle are also common hosts. In this respect, Straten and Jongejan (1993) reported tick burdens on camels (*Camelus dromedarius*) in the vicinity of the St. Catherine monastery, Sinai, Egypt. In total 2,545 ticks (1,491 adults and 1,054 nymphs) were collected and identified.<sup>2</sup> Mean tick burdens were relatively heavy and the range in the number of ticks per camel was quite broad (6 – 173). All collected nymphs were *Hyalomma* spp.<sup>2</sup> Similarly, distribution and prevalence of adult ticks (Acarina, Ixodoidea) parasitizing domestic animals in the northern regions of Somali.<sup>12</sup> Of 26 identified ixodid ticks, 10 species (*H. anatolicum anatolicum*, *H. dromedarii*, *H. erythraeum*, *H. impeltatum*, *Rhipicephalus sanguineus*, *H. marginatum rufipes*, *H. truncatum*, *R. e. evertsi*, *R. pravus* and *R. pulchellus*) were most common with wide distribution. About 60% of identified ticks were *R. pulchellus*. This specie has been considered as the main vector of Nairobi sheep disease (NSD) virus in northern

Somalia.<sup>12</sup> In present study, *H. marginatum* and subspecies *H. m. rufipes* or *H. m. turanicum* were not detected. Hoogstraal *et al.* (1981) suggested the possibility of intergradation or hybridization between the subspecies *H. m. rufipes* or *H. m. turanicum* in this region like Saudi Arabia.<sup>5</sup> Thus, due to the possibility of intergradation and hybridization of apparently different subspecies of *H. marginatum* ticks found in different areas, identification beyond the level of species may not be relevant. Camels, cattle and sheep are common hosts of adult *H. m. turanicum*.<sup>12</sup>

In conclusion, in this study, of six tick species were determined on one-humped camels (*Camelus dromedaries*) of Qeshm Island, Iran, *Hyalomma dromedarii* was the predominant tick species. The provision of tick control programs in the Qeshm Island would seem a prerequisite for improving camel meat and milk production. The pour-on method is the most satisfactory means of applying a pesticide for the control of camel ectoparasites as camel owners even in the Qeshm Island desert can use it with ease. Studies of other internal and external parasites in camels of this important Island would be useful in the development of a strategy for management of camel.



**Fig 1.** Vegetation area, no vegetation area, and urban area of Qeshm Island, the largest island of the Persian Gulf, southern Iran

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