

Original Research Article

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Effect of Doramectin on Biochemical Alteration in Mange Infested Camel

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ABSTRACT

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Mange in camel caused by *Sarcoptes scabiei var cameli*, is considered to be one of the most contagious, zoonotic and debilitating diseases of camels. A total of 7 camels infested with mange were selected from those presented at Veterinary Clinical Complex of the College, in Anand and from surrounding villages. The diagnosis was carried out by skin scraping examination. All the camels were treated with doramectin @ 200 µgm/kg B. wt. once in a week. The biochemical parameters, viz., serum total protein and alanine aminotransferase were found significantly ($p < 0.05$) higher on 35th day in comparison to day '0'. The serum creatinine and aspartate aminotransferase were decreased significantly ($p < 0.05$) on 35th day in comparison to day '0'.

Introduction

Camels are exposed and affected by a range of ectoparasites causing a loss in body condition, health and productivity. Some biting insects act as vectors for *Trypanosoma evansi* and mite *Sarcoptes scabiei* that cause trypanosomiasis and sarcoptic mange, respectively (Higgins, 1986). Sarcoptic mange, caused by *Sarcoptes scabiei var cameli*, is considered to be one of the most contagious, zoonotic and debilitating diseases of camels and Llamas (Jarso *et al.*, 2018).

Sarcoptes is known as burrowing mite and it pierces deeply through the skin surface and lead to intense pruritus and exudative dermatitis (Kumar *et al.*, 1992; Amer *et al.*, 2006). The mange infestation is usually considered to be a seasonal disease, mainly reported in the months of winter or in cold weather with had an acute course (Dinka *et al.*, 2010). Diagnosis of camel mange by skin scraping examination to identify the mange mite (Feyera *et al.*, 2015). Blood samples collected for the biochemical analysis showed significantly lower values of total protein,

albumin, globulin, A:G ratio and calcium (Parmar and Singh, 2005). Based on clinical examination and laboratory findings, the camel is administered with microcyclic lactone such as ivermectin or doramectin along with multivitamins and minerals supplement (Palanivelrajan *et al.*, 2015).

Materials and Methods

In present study 7 camels suffering from mange infestation were presented at the Veterinary Clinical Complex (VCC), Veterinary College, Anand, and nearby villages of Anand district. The skin scrapping of all these animals was done. The 8 ml blood was collected in clot activator vials for serum. The blood was collected on weekly interval to study the biochemical parameters. All camels were treated with doramectin @ 200 µgm/kg b.wt once in a week. The serum biochemical parameters studied included, Total protein (g/dl), Creatinine (mg/dl), Alanine amino transferase - ALT (U/L), and Aspartate amino transferase - AST (U/L) by using standard assay kits with the help of Clinical Serum Biochemistry Auto-analyser (CKK 300). The data was analyzed by using completely randomized design as per Snedecor and Cochran (1994).

Results and Discussion

The results of biochemical values presented in Table 1. The mean values of total protein (g/dl) increased gradually and significantly ($p < 0.05$) with increasing the duration of treatment till 21st day (7.37 ± 0.89) in comparison to the values of previous week. However, the improvement in total protein values was non-significant from 28th day (7.63 ± 0.77) to 35th day (7.46 ± 0.86). The low value of total protein is attributed to seepage of protein through exudation, extravasation of fluids to interstitial tissues and tunnels made by mites. Singh and Gahlot (2000) reported significant decrease in total

protein levels at pre-treatment which increased significant in post treatment stage. Similar findings were reported by Kamal (2008), Parmar *et al.*, (2005), Dixit *et al.*, (2009), Arul (2016) and Varia *et al.*, (2018).

The mean values of serum creatinine (mg/dl) decreased gradually and significantly ($p < 0.05$) with increasing the duration of treatment till 21st (1.22 ± 0.43) and 35th day (0.95 ± 0.41) in comparison to the values of previous week. Singh *et al.*, (2003) reported significant increase in serum creatinine levels in mange affected camels in comparison to healthy camels. Similar finding was reported by Kamal (2008).

The mean values of alanine aminotransferase (U/L) increased gradually and significantly ($p < 0.05$) on 14th (21.06 ± 0.17) and 21st day (21.19 ± 0.10) in comparison to day '0' (20.20 ± 0.13) and 14th day (21.06 ± 0.17). The improved in ALT values was non-significant from 21st day (21.19 ± 0.10) to 35th day (21.16 ± 0.23). The values of AST and ALT varies according to the liver function which is associated with the physiological and health conditions of the animal, Dixit *et al.*, (2009) reported decrease in alanine aminotransaminases in the camels suffering from sarcoptes mange infestation. Similar trend also has been reported by Varia *et al.*, (2018).

The mean values of aspartate aminotransferase (U/L) decreased gradually and significantly ($p < 0.05$) on 7th (75.06 ± 0.58), 14th (68.88 ± 0.85), 21st (65.30 ± 0.67), 28th day (61.81 ± 0.92) and 35th day (61.75 ± 0.67) in comparison to 0 day (79.84 ± 1.01). However, the decrease was non-significant on 35th day (61.75 ± 0.67) in comparison to value on 28th day (61.81 ± 0.92). Premalatha *et al.*, (2010) found the increased level of aspartate aminotransferase (AST) in mangy camels in captivity. Similar findings were also reported by Arul (2016).

Table.1 Serum biochemical findings in mange infested camels on different treatment day

Days of treatment	Total Protein (g/dl)	Serum Creatinine (mg/dl)	ALT (U/L)	AST (U/L)
0 day	6.21 ^a ±0.18	2.59 ^e ± 0.14	20.20 ^a ± 0.13	79.84 ^e ± 1.01
7 th day	6.54 ^a ± 0.13	2.09 ^d ± 0.11	20.58 ^a ± 0.15	75.06 ^d ± 0.58
14 th day	6.98 ^b ± 0.12	1.64 ^c ± 0.10	21.06 ^b ± 0.17	68.88 ^c ± 0.85
21 st day	7.37 ^c ± 0.89	1.22 ^b ± 0.43	21.19 ^b ± 0.10	65.30 ^b ± 0.67
28 th day	7.63 ^c ± 0.77	1.03 ^{ab} ± 0.43	21.32 ^b ± 0.98	61.8 ^a ± 0.92
35 th day	7.46 ^c ± 0.86	0.95 ^a ± 0.41	21.16 ^b ± 0.23	61.75 ^a ± 0.67

Mean (±SE)

Means with uncommon superscripts within the column (a,b,c,d,e) differ significantly (p<0.05).

Table.2 Trace mineral level in mange infested camels on different treatment day Mean (±SE)

Days of treatment	Copper (µg/dL)	Zinc (µg/dL)
0 day	118.47 ^d ± 3.32	81.38 ^a ± 2.06
7 th day	106.05 ^c ± 3.77	85.97 ^{ab} ± 1.77
14 th day	96.75 ^b ± 3.71	90.43 ^{bc} ± 1.96
21 st day	88.63 ^{ab} ± 2.83	91.61 ^c ± 1.62
28 th day	83.92 ^a ± 2.09	93.62 ^{cd} ± 1.17
35 th day	85.31 ^a ± 1.90	97.56 ^d ± 1.10

Means with uncommon superscripts within the column (a,b,c,d) differ significantly (p<0.05).

Trace mineral estimation

The results of trace mineral level are presented in Table 2. The mean values of copper decreased gradually and significantly (p<0.05) with increasing the duration of treatment till 28th day (83.92 ± 2.09µg/dL) in comparison to the values of previous week. However, the decline in copper values was non-significant on 35th day (85.31^a ± 1.90µg/dL) in comparison to 28th day (83.92^a ± 2.09µg/dL). Baksh (2000) and Dongre (2000) recorded serum copper level in healthy

camel of different breeds, age groups and both sexes. Dixit *et al.*, (2008) stated that copper value was significantly increased in mange infested camels.

The mean values of zinc increased gradually and significantly (p<0.05) on 21st day (91.61 ± 1.62µg/dL) and 35th day (97.56 ± 1.10µg/dL) in comparison to 14th day (90.43 ± 1.96µg/dL) and 28th day (93.62 ± 1.17µg/dL) and non-significantly increased on 7th (85.97^{ab} ± 1.77µg/dL), 14th (µg/dL) and 28th day (µg/dL) in comparison to the values

of previous week. Singh *et al.*, (2003) observed significantly decreased value of zinc in mange affected camels. Similarly finding was reported by Dixit *et al.*, (2008).

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