

The Levels of Some Biochemical Parameters in Anatolian Buffaloes With Trichophytosis[#]

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ABSTRACT

The aim of this study is to identify some biochemical parameters levels in Anatolian buffaloes with trichophytosis. The material occur forty Anatolian buffaloes divided in two groups, fifteen Anatolian buffaloes placed in control group and remaining twenty five Anatolian buffaloes served as experimental group, diagnosed as trichophytosis following clinical and microbiological examination. Serum produced from the blood taken out the vena jugularis of all the Anatolian buffaloes. Serum aspartate aminotransferase (AST), alanine aminotransferase (ALT), gamma-glutamyltransferase (GGT), total protein (TP), albumin (ALB), blood urea nitrogen (BUN), total bilirubin (TBil) and creatine concentrations in the serum were measured by using commercial kits. While Anatolian buffaloes with trichophytosis serum ALT and AST levels were found higher ($p<0.05$) than the control group. BUN and creatine levels were found higher ($p<0.05$) in the control group. Besides, there were no difference found between the groups regarding the TP, ALB, TBil and GGT concentrations. As a result, while trichophytosis in Anatolian buffaloes causes ALT and AST concentrations to increase, it decreases the BUN and creatine concentrations. It is thought that this situation takes place as a result of the bad effect of trichophytosis on liver.

Keyword: Anatolian buffalo, trichophytosis, ALT, AST, BUN

Trikofitozisli Anadolu Mandalarında Bazı Biyokimyasal Parametrelerin Seviyeleri

ÖZ

Bu çalışmanın amacı trikofitozisli Anadolu mandalarında bazı biyokimyasal parametrelerin seviyelerinin belirlenmesidir. Çalışmada kırk adet Anadolu mandası iki guruba ayrıldı, on beş Anadolu mandası kontrol grubunda iken geriye kalan yirmi beş Anadolu mandası çalışma grubunda yer aldı, bu gruptaki hayvanlarda klinik ve mikrobiyolojik olarak trikofitozis teşhis edilmişti. Anadolu mandalarının vena jugularislerinden alınan kanlardan serum elde edildi. Serum aspartat aminotransferaz (AST), alanin aminotransferaz (ALT), gama-glutamiltransferaz (GGT), total protein (TP), albumin (ALB), kan üre nitrojen (BUN), total bilirubin (TBil) ve kreatin konsantrasyonları ticari kitler kullanılarak ölçüldü. Trikofitozisli Anadolu mandalarında serum ALT ve AST konsantrasyonları kontrol gurubundan daha yüksek ($p<0.05$) tespit edildi. BUN ve kreatin konsantrasyonları kontrol grubunda daha yüksekti ($p<0.05$). Ayrıca TP, ALB, TBil ve GGT konsantrasyonlarında gruplar arasında farklılık yoktu. Sonuç olarak trikofitozis, Anadolu mandalarında ALT ve AST konsantrasyonlarını yükseltirken, BUN ve kreatin konsantrasyonlarını düşürdü. Bu durumun trikofitozisin karaciğer üzerinde oluşturduğu olumsuz etkiden kaynaklandığı düşünülmektedir.

Anahtar kelimeler: Anadolu mandası, trikofitozis, ALT, AST, BUN

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INTRODUCTION

Trichophytosis is a group of outside infection of keratinized tissues such as leather, bristle, feather and hoofs in humans and animals (Aslan et al. 2010, Kabu and Sayın 2016). Kabu and Sayın (2016) reported that Anatolian buffaloes was trichophytosis. The infection causes dermatophytosis, wholemeal, topical alopecic, circle, intense, whitish and erythematous lesions were sighted all body, specially in the head and neck area in Anatolian buffaloes, this situation resulting in important economic damage because the infection contaminates from one buffalo to other very quickly once it arrive the buffaloes herd (Kabu and Sayın 2016, Birdane and Kabu 2018). Trichophytosis, widely known as ringworm, majorly occurs from *Trichophyton verrucosum* and *Trichophyton mentagrophytes* (Scott 1994). The infection mostly contaminates with the contact to infected and susceptible animals or because of defiled mediums like bedding or walls (Scott 1994). Trichophytosis which is also known as Ringworm is a mycotic infection of keratinized tissues resulting in zoophilic dermatophytes in humans and animals (Efuntoyey and Fashanu 2001, Biberstein and Hirsh 2004, Krakhecke et al. 2005). It is characterized by the thickening of Ruminant epithelial layer and hair loss due to infection (Çenesiz et al. 2007). Whole domestic animals are susceptible to Trichophytosis infections (Yilmazer and Aslan 2010). Trichophytosis is also epidemic and zoonotic infection (Papini et al. 2009, Yilmazer and Aslan 2010). Fungal spores can survive 2-3 years (Gudding and Lund 1995). Consequently, teen, poor and immunosuppressive animals are supposably to be infected. As some researchers reported that Trichophytosis altered some biochemical parameters in ruminants (Yıldırım et al. 2010), some others reported that it did not cause any changes (Arslan et al. 2007). Our study aimed to determine the changes caused by trichophytosis in biochemical parameters at Anatolian buffaloes.

MATERIALS and METHODS

Animal and Biochemical Analysis

In this study the material take place of twenty five Anatolian buffaloes clinically and microbiologically diagnosed as trichophytosis and fifteen healthy Anatolian buffaloes. In clinical examinations of Anatolian buffaloes with trichophytosis, wholemeal, topical alopecic, circle, intense, whitish and erythematous lesions were sighted all body, specially in the head and neck area in anatolian buffaloes. There were not any skin lesions on the healthy animals. Serum aspartate aminotransferase (AST), gamma-glutamyltransferase (GGT), alanine aminotransferase (ALT), total protein (TP),

albumin (ALB), blood urea nitrogen (BUN), total bilirubin (TBil) and creatine concentrations in the serum were measured by using commercial kits.

Sampling and Mycological Analysis

Skin and hair samples collected from the lesion Dermatophytosis in Anatolian buffaloes were cultured in Saboraud Dextrose Agar with 0,5% Chloramphenicol (CM0041). Cultures were incubated at 20 °C for 7 days. At the end of the incubation, growing colonies were taken on a loop and lam, and stained with Malachite green. Having been examined under a light microscope, the preparations were typed according to their hyphae structures and colony morphology (Koneman and Roberts 1985).

Statistical Analysis.

Statistics was used for data analyses. The Mann-Whitney U-test used to compare mean differences between groups. A Wilcoxon signed-rank test performed after a Friedman test to determine where significance occurred within group variables. A significance level of $p < 0.05$ used. To avoid type 1 alpha errors, Bonferroni correction used for the Wilcoxon signed-rank test.

RESULTS

In clinical examinations of Anatolian buffaloes with trichophytosis; wholemeal, topical alopecic, circle, intense, whitish and erythematous lesions were sighted all body, specially in the head and neck area. Skin and hair samples were examined under a light microscope, the preparations typed according to their hyphae structures and colony. While Anatolian buffaloes with trichophytosis serum ALT and AST levels found higher ($p < 0.05$) than the control group. BUN and creatine levels found higher ($p < 0.05$) in the control group. Besides, there were no difference found between the groups regarding the TP, ALB, TBil, GGT concentrations (Table 1).

DISCUSSION

Trichophytosis is a group of outside infection of keratinized tissues such as leather, bristle, feather and hoofs in humans and animals (Aslan et al. 2010, Kabu and Sayın 2016). Kabu and Sayın (2016) reported that Anatolian buffaloes was trichophytosis. The infection causes dermatophytosis, wholemeal, topical alopecic, circle, intense, whitish and erythematous lesions were sighted all body, specially in the head and neck area in Anatolian buffaloes, this situation resulting in important economic damage because the infection contaminates from one buffalo to

other very quickly once it arrive the buffaloes herd (Kabu and Sayın 2016, Birdane and Kabu 2018). In our study it was indicated that TP, ALB, TBil, GGT levels were numerically decreased in control groups. These were not statistically significant. Yıldırım et al. (2010) did not determine any variations in total protein (TP) and albumin (ALB) levels in ruminants with trichophytosis while they

found that the uric acid level was higher in the control group. And some researchers reported that there was no significant difference between dermatophytosis and control groups in total protein and albumin levels (Karapehlivan et al. 2007); these findings correspond to ours.

Table 1. The concentrations of some biochemical parameters in the serum of control and trichophytosis groups.

Tablo 1. Kontrol ve trikofitozis gruplarının serumlarındaki bazı biyokimyasal parametrelerin konsantrasyonları.

Parameters	Control (mean±SD)	Trichophytosis (mean±SD)	P
ALT (U/L)	47.65±3.05	67.15±3.84	0.002
AST (U/L)	105.43±7.04	172.32±6.70	0.000
BUN (mg/dl)	31.38±1.10	24.41±1.05	0.001
Creatine (mg/dl)	1.28±0.05	0.92±0.03	0.000
GGT (U/L)	13.75±1.35	16.15±1.13	0.242
TP (g/dl)	64.38±0,66	64.40±1.13	0.938
ALB (g/dl)	33.84±0.76	34.80±1.80	0.311
Tbil (mg/dl)	0.13±0.15	0.20±0.34	0.511

Nweze (2011) reported that trichophytosis is occasioned by fungi in the genera Epidermophyton, Microsporum and Trichophyton. There are three ecological groups of trichophytosis: anthropophilic (mostly associated with humans), zoophilic (associated with animals) and geophilic (found in the soil). But, anthropophilic species have been found to cause infections in animals. Arslan et al. (2007) reported that no changes occurred in AST, ALT, BUN and creatine levels in the cattle with trichophytosis. And in other studies at a horses with dermatophytosis, there was no significant difference between dermatophytosis and control groups in AST, ALT and GGT (Ural K et al. 2009). In our study, on the other hand, creatine level was found to be high in the control group while AST and ALT levels were high in Anatolian buffaloes with trichophytosis.

The results indicated that trichophytosis in Anatolian buffaloes increased ALT and AST concentrations whereas it reduced BUN and creatine concentrations. It has been deduced that this might have resulted from trichophytosis negative effect on the liver.

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