

## STUDY OF EFFECTS FEEDING *ALBIZIA LEBBECK* LEAF ON SOME BLOOD BIOCHEMICAL PARAMETERS ON ONE-HUMPED CAMEL

Khadijeh Ansari<sup>\*</sup>, Tahereh Mohammad abadi<sup>\*\*</sup>, and Mohsen Sari<sup>\*\*</sup>

<sup>\*</sup>Department of Animal Science, Faculty of Animal Science and Food Technology, Ramin  
Agriculture and Natural Resources University of Khouzestan, Ahvaz, Mollasani, Iran

<sup>\*\*</sup> Department of Animal Science, Faculty of Animal Science and Food Technology, Ramin  
Agriculture and Natural Resources University of Khouzestan, Ahvaz, Mollasani, Iran

**Keywords:** *Albizia lebeck*, Blood metabolite, One-humped camel.

### ABSTRACT

*Albizia lebeck* sinesis a tropical legume and is the most widespread of *Albizia* genus in the world. The leaf of *Albizia lebeck* has a low content of tannins and phenolic compounds and relatively high content of N and Ca. The aim of this experiment was to investigate the effect of feeding of *Albizia lebeck* as a replacement for alfalfa on blood parameters of one-humped camel. Four dromedary camels (2 fistulated) about 2 years old and 150-200 kg weight of the Arabi breed were selected. They were fed for about one month with control diet (60% bagasse+40% alfalfa) or diet without *Albizia lebeck* and diet containing *Albizia lebeck* (100 percent of alfalfa) by two periods. In the end of trial, blood samples were obtained and some metabolites were measured. The results showed that the replacing *Albizia lebeck* with alfalfa in one-humped camel had not any effect on blood factors. Glucose levels in control and experimental diet was 112 and 108.25 mg/dl, respectively. Feeding *Albizia lebeck* during the experimental period, had no significant effect on blood urea nitrogen and triglyceride. Cholesterol content of control and experimental diets was 25.75 and 26 mg/dl, respectively. According to the results of this study, replacing *Albizia lebeck* leaf for alfalfa in diet of one-humped camel did not change blood urea nitrogen, glucose, cholesterol and triglyceride, therefore it may be used by 100 % alfalfa in one-humped camel diet.

## INTRODUCTION

*Albizia lebbekor* siris is a native plant of tropical Africa, Asia and northern Australia. This plant is a tropical legume that belongs to fabaceae family and mimosoideae subfamily. It is one of the most widespread and common species of Albizia genus in the world. It grows five meters and produces 100-120 kg edible dry matter per year. Studies indicated carbohydrates as major components in siris and potassium and copper were found in the highest and lowest amount, respectively (2). Siris is an economically important plant for industrial and medicinal uses. Leave and seeds are used for eye problems and flowers are used for the treatment of spermatorrhea (3). Siris leave has a low content of tannins (4%) and phenolic compounds. *Albizia lebbeck* leave are containing 1.3% of dry matter mimosin (nonprotein and toxic amino acid). The amount is depending to the season and maturity (4). Also leaf is containing relatively high content of crude protein (16 to 23%) and Ca, and neutral detergent fiber is 35 to 41 % (5). Linoleic acid was the major fatty acid in leaf and pods (6,7). Most livestock readily eat leaves and young twigs of this promising fodder tree (1). The goal of this trial was to investigate of effect of using of *Albizia lebbeck* leaf as a replacement for alfalfa on blood metabolites in one-humped camels.

## MATERIAS AND METHODS

The leave of *Albizia lebbeck* were collected from Mollasani of Ahvaz and milled. Four dromedary camels (2 fistulated) about 2 years old and 150-200 kg weight of the Arabi breed were selected. They were fed with a forage based diet, 60% bagasse+40% alfalfa or control diet (without *Albizia lebbeck*) and diet containing *Albizia lebbeck* (100 percent of alfalfa) for 1 month by two periods. Diets fed twice per day according to completely randomized design. At the end of the period, blood samples of camels were taken three hours after the morning feeding via jugular vein, centrifuged and plasma was separated. Glucose, urea, cholesterol and triglycerides of blood were measured by using Autoanalyzer (model, BS200). The data was used to analysis as a completely randomized design using the General Linear Model (GLM) procedure of SAS software, version 9.1. The Duncan multiple range test (8) was used to compare means at  $P < 0.05$ .

## RESULTS

The results showed that the replacing *Albizia lebbek* with alfalfa in diet of one-humped camel had not any effect on blood parameters. Glucose content of diets of control and experimental was 112 and 108.25 mg/dl, respectively. Feeding *Albizia lebbek* during the experimental period, had no significant effect on blood urea nitrogen and triglyceride. Cholesterol content of control and experimental diet was 25.75 and 26 mg/dl, respectively.

**Table (1): Blood biochemical parameters of one-humped camel fed with *Albizia lebbek* leave (mg/dl)**

Treatments	Glucose	Urea	Cholesterol	Triglyceride
Control (diet without <i>Albizia lebbek</i> )	112	29.73	25.75	38
Diet with <i>Albizia lebbek</i>	108.25	28.55	26	42
SEM	2.77	1.07	1.094	2.73
P-value	0.3761	0.9300	0.8770	0.3415

SEM: Standard error of means, Means with letters within each column differed significantly ( $P < 0.05$ ).

## DISCUSSION

Plasma concentrations of glucose, cholesterol, triglyceride and urea nitrogen of one-humped camel were not affected by using *Albizia lebbek*. The other researchers reported, feeding diets containing tannin in Alpine goats had no effect on blood glucose (9). The other (10) explained that use of diets containing subabul (belong to legumes) in Najdi goats and Arabi sheep were not influenced glucose, cholesterol, triglyceride and urea nitrogen of blood. Also in other study the inclusion of *Albizia lebbek* in Najdi goat diet had no significant effect on glucose, cholesterol and urea nitrogen (11). But some reports explained that plasma urea nitrogen was lowered in sheep and goats fed legumes that high in tannins (12). According to studies (15), camelids can recycle up to 90% of blood urea nitrogen, in contrast to ruminants who present the value of 10 to 30%. The nitrogen recycling in camelids increases in the case of lower proteins in diet and or dehydration (16).

In contrast with our results, saponin (exist in legumes) directly connect with cholesterol in the intestine and inhibit the absorption of cholesterol. Also, saponins bind with bile acids in the intestine and reduce the circulation of bile acids in the intestines and excretion of cholesterol occurs. Saponins could affect membrane permeability and blood cholesterol and reduces

blood cholesterol (13). The researchers reported legumes (such as subabul) shift the pattern of rumen fermentation and reduce the amount of acetate and increase propionate and glucose uptake that don't prove our result (14).

## CONCLUSION

According to the results of this study, *Albizia lebbek* as a substitute for 100 % of alfalfain diet of one-humped camel did not change blood urea nitrogen, glucose, cholesterol and triglyceride. Therefore it can be used as a forage instead of alfalfa in one-humped camel diet.

## REFERENCES

1. Lowery, J. B.(1989). Agronomy and forage quality of *Albizzia lebbek* in the semi-arid tropics. *Tropical Grassl.* 23(2): 84-91.
2. Mozafaryan, W.(2008). Ilam Flora, Publisher Department of Natural Resources of Ilam. 597-598. (In Farsi).
3. Shah, F. H.; Firdos, T. and Rehman, Z.(1983). Improvement in the digestibility of best pulp by chemical treatment. *Pakistan J. Sci. Res.* 26: 328.
4. Kumar, A.; Saluja, A. K.; Shah, U. D. and Mayavanshi, A.V.(2007). Pharmacological potential of *Albizzia lebbek*: A Review. *Pharma. Rev.*1(1): 171-174.
5. Gupta, B. S.(1980). Nutritive value of siris (*Albizzia lebbek*) tree leaves. *Indian J. Nutrition Die.* 1:187–191.
6. El-Hawary, K.; El-Fouly, N.; Sokkar, M. and Talaat, Z.(2011). A phytochemical profile of *Albizia lebbek* L. Benth. Cultivated in Egypt. *Biochemistry.* 6: 122-141.
7. ZiaUlhaq, M.; Shakeel, A.; Mughal, Q. and Sezai, E.(2013). Compositional studies and antioxidant potential of *Albizia lebbek* (L.) Benth. pods and seeds. *Turkish J. Bio.* 37:25-32.
8. Duncan, D.B.(1955). Multiple range test and multiple F tests. *Biometric.* 11:1-42.
9. Merkel, R.C.; Toerien, C.; Sahlu, T. and Balanche, C.(2001). Digestibility, N balance and blood metabolic levels in Alpine goat wethers fed either water oak or shining sumac leaves. *Small Rum. Res.* 40:123-127.

10. Ebadi, M.(2014). Effect of subabul on digestibility and rumen microbial fermentation of Najdi goat and Arabi sheep. Thesis of Masters Science. Animal nutrition. Ramin Agriculture and Natural Resources University of Khouzestan. Iran. (In Farsi).
11. Babadi, L.(2015). Effect of diets containing alfalfa alternative siris on digestibility, microbial fermentation and rumen protozoa population of Najdi goat. Thesis of Masters Science Animal nutrition. Ramin Agriculture and Natural Resources University of Khouzestan. Iran. (In Farsi).
12. Cook, R.W.; Scott, C.B. and Hartmann, F.S.(2008). Short-term Mesquite pod consumption by goats does not induce toxicity. *Rangel. Ecol.Manage.* 61 (5): 566–570.
13. Hu, W. L.; Liu, J. X.; Ye, J. A.; Wu, Y. M. and Guo, Y. Q.(2005). Effect of tea saponin on rumen fermentation *in vitro*. *Anim. Feed Sci. Technol.* 120: 333-3.
14. Kongmun, P.; Wanapat, M.; Pakdee, P. and Navanukraw, C.(2010). Effect of coconut oil and garlic powder on *in vitro* fermentation using gas production technique. *Lives. Sci.* 127: 38.44.
15. Engelhardt, W. and Holler, H.(1987). A survey of the salivary and gastric physiology of Camelids. *Anim. Res. Develop.* 26: 84–94.
16. Souilem, O. and Djegham, M.(1994). La digestion gastrique chez le dromadaire (*Camelus dromedarius*). *Recommandation Medicine Veterinary* 172 (4/5): 199-208.