

## STUDY EFFECT OF MEDICINAL PLANT *MYRTUS COMMUNIS* ON SOME BLOOD BIOCHEMICAL PARAMETERS ON ARABI SHEEP

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### ABSTRACT

*Myrtus communis* (myrtle) is rare medicine plant that exist in limited areas in Iran and the world. Essential oil of myrtle leaf is containing terpinolene, cineole, linalool, terpineol and linalyl acetate. This experiment was conducted to evaluate the effect of *myrtus communis* leaf on some blood parameters of Arabi sheep. Eight sheep with 9 month's age and average weight  $32 \pm 1.5$  kg were fed with control diet (30:70 forage to concentrate without myrtle leaf) and diet containing 4% myrtle leaf for one month. In the end of experiment, blood samples were taken and some metabolites were measured. The results of this experiment showed diet containing 4% myrtle leaf significantly reduced blood urea, triglyceride and glucose of sheeps in compared with the control diet. But the blood cholesterol value of sheeps did not affected by inclusion of myrtle leave. Therefore, according to the effect of phytochemicals of *myrtus communis* leaf on decreasing blood parameters, it seems to be used by 4% in Arabi sheep diet.

## INTRODUCTION

The use of medicinal plants in recent years has been receiving serious attention from veterinarians around the world. Medicinal herbs are used in various forms in all groups of animals (cattle, poultry, fish and bees) (1). Medicinal plant extracts are combination of secondary metabolites and usually composed of terpenoids and phenols that improve the utilization of nutrients in ruminants and can influence blood parameters (2). Myrtle plant is a rare plant that exists in limited areas in Iran and the world. It has almost fleshy fruits, containing numerous seeds, dark blue oval and has a sweet taste and is astringent. Essential oil of myrtle leaf contains terpinolene, cineole, linalool, terpineol and linalyl acetate (3). Among the active ingredients in the myrtle plant, can include phenolic acids such as gallic acid, vanillic acid and ferulic acid; tannins such as galotannin and flavonoids such as myricetin, catechin and quercetin (4). Myrtle leaf was used traditionally in the treatment of respiratory malformations, bronchitis, sinusitis, diarrhea and hemorrhoids in Algeria (5). The studies showed that myrtle essential oils are used greatly as a food preservative and traditional medicine (6). Researchers showed that secondary metabolites of medicinal plants have hypoglycemic properties and reduce cholesterol and other lipids (7). The information about using of myrtle leaf in animal nutrition is rare. The aim of this experiment was to study the effect of medicinal plant *Myrtus communis* on some blood biochemical parameters of Arabi sheep.

## MATERIALS AND METHODS

In this experiment, 8 Arabi sheep with 6 month's age and average weight  $32 \pm 1.5$  kg were used. Animals were fed with control diet (30 % forage and 70 % concentrate without myrtle leaf) and diet containing 4% myrtle leaf for one month. At the end of the period, blood samples of sheep 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, diet containing 4% myrtle leaf significantly reduced blood urea, triglyceride and glucose of sheep when compared with the control diet ( $P < 0.05$ ). But the blood cholesterol value of sheep did not affect by inclusion of myrtle leaf ( $P < 0.05$ ). The cholesterol content for control diet and diet with myrtle leaf was 46.75 and 45.50 mg/dl, respectively.

**Table (1): Blood metabolites of sheep fed with a diet containing the myrtle leaf (mg/dl)**

Treatments	Triglyceride	Glucose	Cholesterol	Urea
Control (diet without myrtle)	19.25 <sup>a</sup>	100.50 <sup>a</sup>	46.75	38.87 <sup>a</sup>
Diet with myrtle	14.75 <sup>b</sup>	97.75 <sup>b</sup>	45.50	30.22 <sup>b</sup>
SEM	0.381	0.489	0.395	0.677
P-value	0.0003	0.0073	0.0677	0.0001

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

## DISCUSSION

Our results showed that using 4% myrtle leaf in diet of sheep significantly reduced blood urea, triglyceride and glucose ( $p < 0.05$ ), but inclusion of myrtle leave did not affect the blood cholesterol. The concentration of blood urea nitrogen function is due to concentration of rumen ammonia. The possible reasons for loss of blood urea by myrtle leaf is that the secondary metabolites of medicinal plants decrease degradability amino acids by microorganisms in the rumen and ammonia decrease (9). In consistent of results of this trial, studies showed that flavonoids of plants caused to reduce plasma glucose because they influence rumen fermentation of bacteria and alter the volatile fatty acids concentration (10). Also it is reported that adding of *scrophularia striata* plant (containing linalool and quercetin) to the diet reduced blood glucose of sheep (11). Purslane flavonoids (containing quercetin) also showed the glucose reduce (12). Researches has shown that adding purslane (containing quercetin) to the diet of Turkish qashqai lambs reduced plasma concentration of triglyceride (12). Research results have shown that flavonoids, alkaloids and pectin in medicinal plants have hypoglycemic properties. It also seems that medicinal plants and their extracts are effective in reducing cholesterol and other lipids in the blood because of the production of enzymes that break down bile, reduce the pH of intestinal tract and inhibit the activity of beta hydroxy methyl glutaryle-COA (7).

## CONCLUSION

Therefore, the results of this experiment showed phytochemicals of *myrtus communis* leaf decreased blood urea, triglyceride and glucose and had not any effect on cholesterol, so it may be used about 4% in Arabi sheep diet.

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