

IMPACT OF ACETIC ACID ON MILK YIELD, COMPOSITION, AND SOME BLOOD PARAMETERS IN AWASSI EWES AT DIFFERENT STAGES OF LACTATION

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Abstract

The important thing of the study lies in the inclusion of acetic acid in the diet of the Awassi ewes, which helps increase the fermentation in the rumen, therefore to increase the percentage of fat. Therefore, this study aimed to add different proportions of acetic acid to the diet of ewes and study its effect on milk yield, composition, and some blood parameters.

This experiment was conducted between January-May/2022 at animal field of Technical Agricultural College/ Northern Technical University/ Iraq by using 18 Awassi ewes aged 3 - 4 weeks after birth, with an average body weight of 37.63 ± 1.85 kg. Ewes were distributed into three treatments: first treatment was control fed with experimental diet without additive (T1), ewes in the second (T2) and third (T3) treatment were fed with addition 5 and 10 mL respectively of glacial concentrated acetic acid. The acid was diluted (1 : 10) with tap water, and then mixed with concentrate feed and introduced directly to the ewes. Concentrate diet was consisted from barley grain, wheat bran and soybean meal. Wheat straw was offered by 0.5 kg per ewe daily and in addition to grazed with artificial alfalfa pasture for 2 hr three times a week. Also fresh alfalfa was provided *ad libitum*. Ewes were weighed biweekly to estimate body weight change during the stages of lactation, and milk fat, protein, solid non-fat, and lactose were measured immediately by using the Lactoscan system. Also, 10 mL of blood samples were collected from jugular vein through each stage of lactation using a plastic syringe, blood samples were centrifuged and glucose, urea, total protein, cholesterol, and triglycerides using (Biolab analysis kit, France) by UV-spectrophotometers were measured. Statistical analysis of the data was performed using SAS software, the general linear model technique is used to do statistical analysis of the data for a complete random design (CRD), and the significant differences between the mean were determined using Duncan's multiple range tests.

In general, results indicated that acetic acid had no effect on milk yield and composition except for fat that increased as acetic acid increased significantly ($p \leq 0.05$) in T3 as compared to T1 (5.53, 6.01 and 6.2%), respectively. Although the differences were insignificant, ewes' weight was higher in the treatments that fed with acetic acid than in control during all stages of lactation. There is trend toward increasing ($p \leq 0.01$) blood glucose, while blood cholesterol and triglyceride decreased as acetic acid increased in the feed.

The administration of acetic acid at different levels in the concentrate feed of Awassi ewes, affects milk fat which increased with the increase of acetic acid level. This was accompanied by changes in some blood measurements when the glucose concentration increased, while cholesterol and triglycerides decreased with the increase in acetic acid intake. The main effect of acetic acid was noted in the increase of ewes' weight as compared control.

Key words: Acetic acid, Awassi ewes, Milk composition, Milk yield, Blood parameters.