EFFECT OF NUTRITIONAL MANIPULATION DURING HEAT STRESS ON PERFORMANCE OF LACTATING COWS

By

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B.Sc. Agric. Sc. (Animal Production), Cairo University, 2002

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تاثير المعالجة الغذائية خلال الإجهاد الحراري على أداء ألابقار الحلابة

رسالة مقدمة من

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ABSTRACT

Ehab Nasr Meebed Ahmed Daoud: Effect of Nutritional Manipulation During Heat Stress on Performance of Lactating Cows. Unpublished M.Sc. Thesis, Department of Animal Production Faculty of Agriculture, Ain Shams University, 2011

This investigation was carried out at two studies, the first aimed to evaluate the effect of using fibrolytic enzymes (Fibrozyme) on reducing the effect of heat stress on performance (milk production, composition and some blood parameters) of lactating Holstein Friesian cows.

Total of 92 Holstein dairy cows (in early, mid and late lactation (multiparous =60 and primiparous = 32) were distributed among two groups; G1: control un-supplemented ration. N= 46 G2: Fibrozyme supplemented ration N=46.

Cows in the two groups were fed as a group open feed and fed a total mixed ration (TMR) consisting of similar amounts of alfalfa hay, corn silage, alfalfa clover, sunflower meal, linseed meal, gluten meal 60%, soybean, yellow corn ,lime stone, vitamins, mineral mixture, protected fat (magnapac), sodium bicarbonate and calcium diphosphat.

Milk yield, FCM yield, and total solids yield were significantly increased. Milk composition was not significantly affected by adding Fibrozyme, except milk fat percentage was significantly increased. Adding Fibrozyme supplementation caused significant increase in serum total protein content, glucose, Triiodothyronine (T3), total bilirubin, and Globulin.The objective of second study was to evaluate the effect of Fibrolytic enzyme on nutrient digestibilities and rumen parameters of tested sheep during heat stress.

Barki Lambs 50 Kg $\pm$1.5 initial live body Weight were randomly designed among Four groups; G1 control 1(un-supplemented ration and un-shaded pin N=3), G2 Control 2 (un-supplemented ration

and shaded pin N=3), G3 Fibrozyme1 (supplemented ration with fibrolytic enzyme 10g/h/d and un-shaded pin: N= 3), G4 Fibrozyme2 (supplemented ration with fibrolytic enzyme 10g/h/d and shaded pin: N= 3) each group was placed in a pen equipped with free stalls.

Lambs in the four groups fed a common concentrate mixture and free access to *sorgam grass* as a source of forage. Daily ration were adjusted biweekly according to changes in body weight. The animals were fed their rations in groups as a rate of 3% of their average live body Weight (40: 60 roughage : concentrate ration.

The obtained results indicated that supplementation of Fibrozyme had significant effect on dry DMI as concentrate, roughage and total DMI (g/h/d), Nutrient digestibility's war not significantly affected by adding Fibrozyme as DM, OM, but CP, CF and EE was significant effect for supplemented group compared with control group.

The Fibrozyme supplement had no significant effect on Rumen liqueur PH value and TVF'S production compared with un-supplemented., Rumen liqueur ammonia concentration in control group was significantly higher than Fibrozyme.

It can be concluded from the two studies that supplementation the diets with Fibrozyme alleviates the heat stress effect in dairy cows through modulating most blood metabolites to its normal range and improving both thyroid activity and feed utilization and enhance milk production, composition of heat-stressed dairy cow under Egyptian summer conditions. It also alleviate the heat stress effect in sheep through improvement DMI ,Nutrient digestibilities , Feeding values and enhance rumen liquor parameters and feeding efficiency.

KeyWords: Heat stress, Fibrolytic enzymes (Fibrozyme), Holstein Friesian cow, milk yield and composition, Barki sheep

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