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Neurotransmitter effect of galanin on the mean plasma concentrations of growth hormone, triiodothyronine, thyroxine, and milk protein in dairy goats sannan

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ABSTRACT

This study investigated the effects of five levels of galanin on plasma concentrations of growth hormone, triiodothyronine, thyroxine, and milk protein in dairy goat breed was sannan. 15 breeds of dairy goats sannan all about the same age and weight were selected for this study and were randomly divided into five treatments (three replicates per treatment). Levels of the hormone injection of galanin in the experiment (0, 0.2, 0.4, 0.8, 0.16) (µg/ml galanin hormone per kilogram of body weight), respectively. Finally, experimental growth hormone was increased hormone galanin (P <0 /05). But a depressing effect on plasma concentrations of thyroid hormones triiodothyronine and thyroxine were not found to be statistically significant (P >0 /05). This hormone also reduced the percentage of protein, which was not statistically significant (P >0 /05).

Key words: Galanin, growth hormone, triiodothyronine, thyroxine, Protein Milk, Goat Dairy

INTRODUCTION

Studies have shown that the production of milk and milk protein under the control of metabolic hormones such as growth hormone and thyroid hormones triiodothyronine and thyroxine (8). Neurotransmitters different on growth hormone , thyroxine and triiodothyronine influence. This is one of the neurotransmitters galanin . Galanin is a peptide with 29 amino acids in large quantities in the central region and the peripheral nervous system, particularly the hypothalamus and pituitary region has been found (15). Since galanin on neurons shows that nerve cells secrete growth hormone releasing hormone releasing hormone secretion shows have drawn thyroid stimulating hormone. The purpose of this study was to determine the effect of galanin on the mean plasma concentrations of growth hormone, thyroxine, triiodothyronine and milk protein in goat sannan.

MATERIALS AND METHODS

15 dairy goats sannan first race of approximately the same weight and age (weighing 40 to 50 kg) were separated from the herd and randomly assigned to 5 treatments. First treatment or control saline through the jugular vein and the rest of the treatments received different doses of galanin.But before injection to

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determine the concentration of growth hormones, thyroxine and triiodothyronine in normal goats of all the hours of 9 am Blood samples were taken within 2 days of this period, the period before they are injected. After 10 days at 9 am each dose treatments They are injected. After 10 days at 9 am and the doses received each of the treatments and the control saline , and two hours later were bled from the jugular vein .This time period, called the injection period .After this period of notice of changes in blood hormone concentrations after discontinuation of animals injected with hormones for 2 days in morning blood samples were taken in this period the period after the injection say. In order to isolate the serum, blood samples within 20 minutes centrifugation 3000_{RPM} was put away and after separating the serum, blood samples into the freezer with a temperature of - 20 ° C were transferred. Milk production in the morning and afternoon daily record was recorded and milk samples were taken to determine milk protein by milk scan. To measure the concentration of growth hormones and thyroid hormones were used in these kits using radioimmunoassay (RIA) and growth and thyroid hormones were measured. For GH assay, bovine GH(USDAoGH-I-1) and antisera against GH were provided by Dr. A. F Parlow (Director of Pituitary Hormones and Antisera Center, Harbor-UCLA Medical Center, 1000 West Carson Street, Torrance, CA. Ovine GH (USDA-oGH-I-1) was used for iodination. A sevenpoint standard curve ranging from 0.04 to 10 ng GH was used. An average assay binding of 40% was achieved using an initial 1:20,000 dilution of GH antiserum for GH assays. For T_3 assay, T_2 were purchased from Sigma Chemical Company and T_3 antisera were purchased from Chemicon Co. (Temmecula, Ca). T_2 were used for iodination. A six point standard curve ranging from 0.32 to 5.2 ng T_3/ml was used. An average assay binding of 70% was achieved using an initial 1:5000 dilution of T_3 antiserum for T_3 assays. For T_4 assay, T_3 were purchased from Sigma Chemical Company and T_4 antisera were purchased from Chemicon Co. (Temmecula, Ca). T_3 were used for iodination. A six-point standard curve ranging from 2.2 to 25 ng T4/ml was used. An average assay binding of 60% was achieved using an initial 1:5000 dilution of T_4 antiserum for T_4 assays (Khazali et al.,2006). In addition, this experiment is to compare different treatments, including different doses of galanin in the blood, which contains three periods before injection, was injection and after injection were compared. Statistical design of experiments, repeated measures design was based on the general linear model. Analysis of variance and mean comparison using SPSS software and Duncan's test was performed to compare the mean milk protein.

RESULTS

The results showed that levels of the hormone injection of galanin increases the mean plasma concentrations of growth hormone (P <0 /05), (Figure1). But decreased the plasma concentrations of the hormones triiodothyronine and thyroxine, which is not statistically significant (P >0 /05), respectively (Figures 2 and 3). The results also showed that the hormone injection of galanin reduced the percentage of milk protein which is not statistically significant (P >0 /05), (Figure 4) results also showed that the effect of time (before (days 1-2) , time 3-12 days) and after (days 13-14 injections) and the interaction between the mean plasma GH is significant (P <0 /05), (Figure 5), but the effect of injection duration and effect its interaction with hormones triiodothyronine and thyroxine treatment and also in relation to milk protein percentage was not significant (P >0 /05), respectively (figures 6, 7 and 8) .

DISCUSSION

The results showed that the effect of growth hormone hormone injection of galanin in all experimental groups compared with the control group increases, this increase is statistically significant. Shows the growth hormone-releasing hormone secreted by the hypothalamus, the effect of GHRH on pituitary GH secretion is induced (Gustina et al., 1995).

The results with the results obtained by (Murakami et al., 1989 and Maytr et al., 1990), on mouse(Davis et al., 1987 and Giustina et al., 1993 and Marinis et al., 2000) on human and (Spencer et al., 1994 and Salri et al., 1999), correspond to the sheep.

Results regarding the effect of galanin on hormone Mean plasma concentrations of growth hormone in groups (II , III , IV and V) show that the mean plasma concentrations of growth hormone at all levels of the hormone injection of galanin increases, which is the highest increase in five groups . Mean plasma levels of growth hormone in the course of the study (before, during and after injection) was observed in groups (II , III , IV and V) , the period during injection of the hormone to the period before and after injection, the mean increase which was found to be statistically significant. However, certain changes in the control group did not significantly differ among the three treatment periods were observed, but we saw Groups received hormone galanin on growth hormone injection period and we can conclude that These changes are caused by hormone galanin. However, the highest increase was observed in group V The mean concentration of growth hormone was done, probably at higher doses of galanin receptors show greater sensitivity. And thus increasing doses, increase growth hormone levels were higher.Studies have shown that cells confirms the synthesis of somatostatin (inhibition confirms confirms the growth hormone releasing hormone) in the area of Periventricular inhibit GHRH (Dickson et al., 1994), and also indicated that galanin receptors are found in abundance in the area Periventricular (Chan et al., 1996), and in tests has been shown that galanin can increase growth hormone secretion, by inhibiting the release of somatostatin, but the mechanism by which this occurs is unknown.

The results of this study showed that administration of both hormones triiodothyronine and thyroxine Hormone galanin decreased in all experimental groups compared with the control group, but this reduction may not be significant. Studies show that hormone release shows Thyrotrop (TRH) secreted by the hypothalamus affecting Thyrotrop cells in the anterior pituitary increased thyroid stimulating hormone (TSH), which causes the release of hormones affecting thyroid hormones triiodothyronine and thyroxine it is.

These experiments conclude that (Ottlecz et al., 1988) conducted on male mice corresponded. However, in an experiment by (Baranowska et al., 1999) performed on mice injected with no significant change in the effect of galanin on hormone (TSH) occurred. Results regarding the effect of galanin on the mean plasma concentrations of thyroid hormones in groups (II, III, IV and V) show that the mean concentrations of thyroxine and triiodothyronine hormones decrease with increasing doses of the two hormones in the largest reduction in group V Took place. Mean plasma levels of thyroid hormones in the course of the study (before, during and after injection) was observed in groups (II , III , IV and V) during the infusion period , the mean concentration of these hormones is reduced compared to the period before and after injection These differences were not statistically significant. But in the control group was unchanged, and no differences were observed between periods. And where we see a further reduction of these hormones were injected with increasing doses, it can be concluded that the decrease was due to a hormone injection of galanin. As noted in the fifth group was significantly lower than that concluded more effective in reducing these hormones has a higher dose of galanin and galanin receptors of the neurotransmitters the higher concentrations are more sensitive to For this reason the higher dose had more work 's.

Studies have shown that galanin may decrease hormone levels of TSH and thyroid hormone concentrations decreased. For example, in an experiment by (Ottlecz et al., 1988) were performed on male mice to mice injected with the hormone galanin TSH hormone concentration is reduced, the result should be expected that thyroid hormones decline.

The results of this study indicate that milk protein hormone injection of galanin in Experimental groups compared with control groups begin to decrease, which was statistically significant compared with the control group, the decrease was not significant. Results regarding the effect of galanin on hormone milk protein groups (II, III, IV and V) showed that milk protein percentage decreased with increasing doses greatest decrease was observed in the fifth group. The mean percentage of milk protein with periods (before, during and after Injection) was observed in groups (II, III, IV and V) during the infusion period, the mean percentage Milk protein was reduced compared to the time before and after that was not statistically significant, and the Considering that controls protein was unchanged in all three periods can be concluded that galanin decreased milk protein percentage is a result of hormone injections. And as noted Milk protein percentage was significantly lower than that in group V showed the strongest effect on milk protein hormone galanin occurs at high doses. The experiments were carried out on the effect of growth hormone, for example, in an experiment by (Lanna et al., 1992 and Machlin, 1973) Dairy was observed that administration of growth hormone increases milk production, but no significant changes in relation to milk protein will be created. However, we The controls were injected with increasing doses of growth hormone and thyroid hormone, galanin were reduced. We will refer to this experiment as well as the reduction in milk protein hormone, galanin were injected with increasing doses of the hormone seems to be percent of galanin Affect milk protein, although this is not significantly affected. This effect may be done by reducing the amount of thyroid hormones.

Conclusion

According to the results obtained in these experiments and cited sources, injection of galanin increases testosterone, growth hormone, and decreased plasma levels of hormones triiodothyronine and thyroxine in the dairy goats, and in higher doses, the effect of the higher hormone growth hormone and decrease thyroid and also has a milk protein. Galanin thus cannot be used to increase milk protein percentage. Since the mechanism of action of galanin on growth hormone and thyroid hormone interaction with other hormones, neurotransmitters, this is not entirely clear, it is suggested that in future studies these effects should be studied.

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Figure 1 - Comparison of mean serum GH concentrations among the different experimental treatments in the experiment

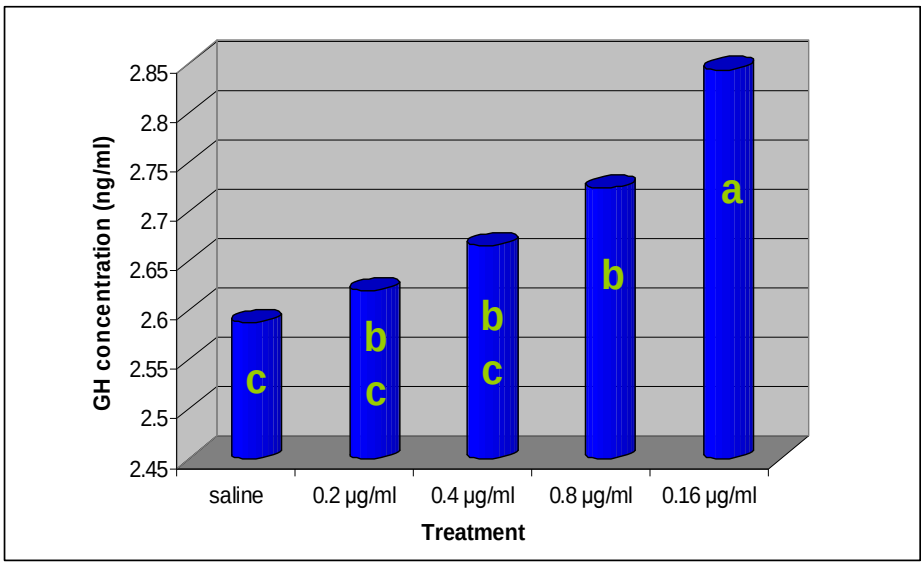

Figure 2 - Comparison of mean plasma concentrations of triiodothyronine hormone treatments across the entire experimental period

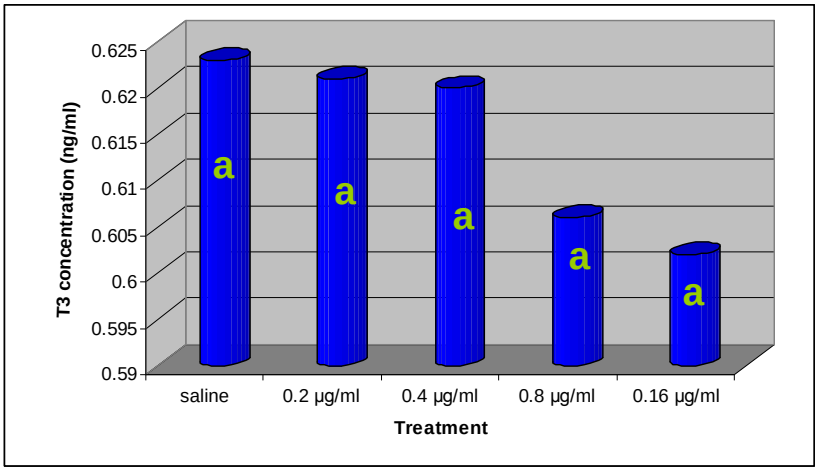

Figure 3 - Comparison of mean plasma concentrations of thyroxine hormone treatments for the whole period of the experiment

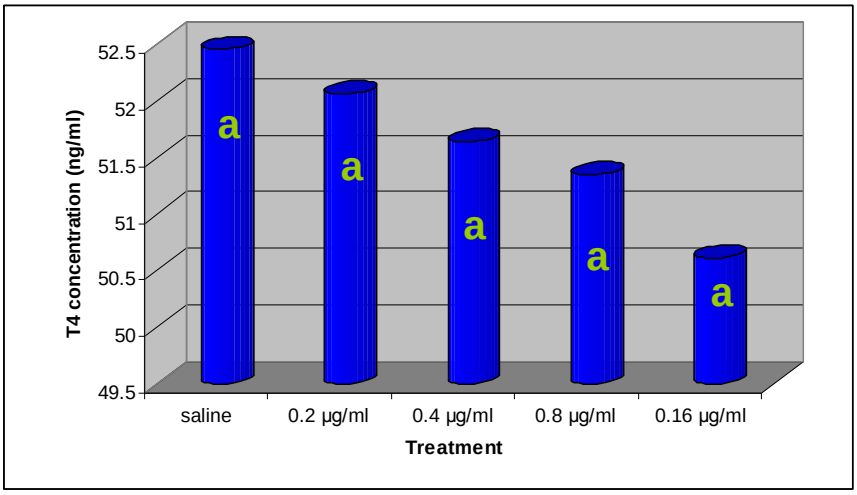

Figure 4 - Comparison of the mean percentage of milk protein between the different treatments of the experimental period

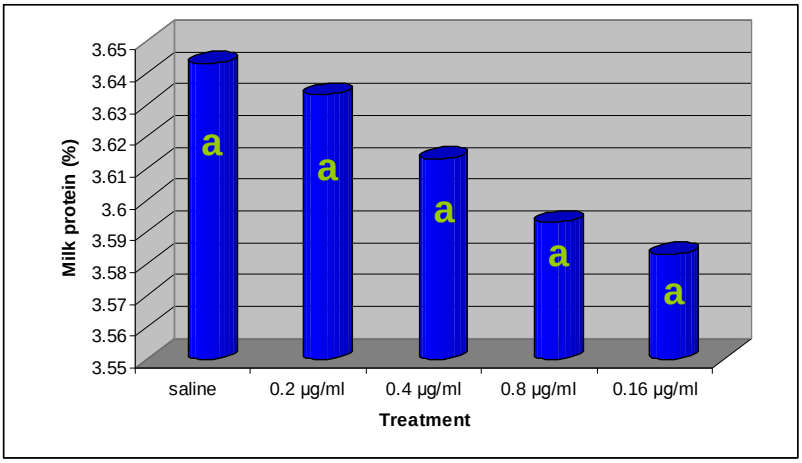

Figure 5 - Comparison of mean plasma concentrations of growth hormone in different periods experiment with different treatments

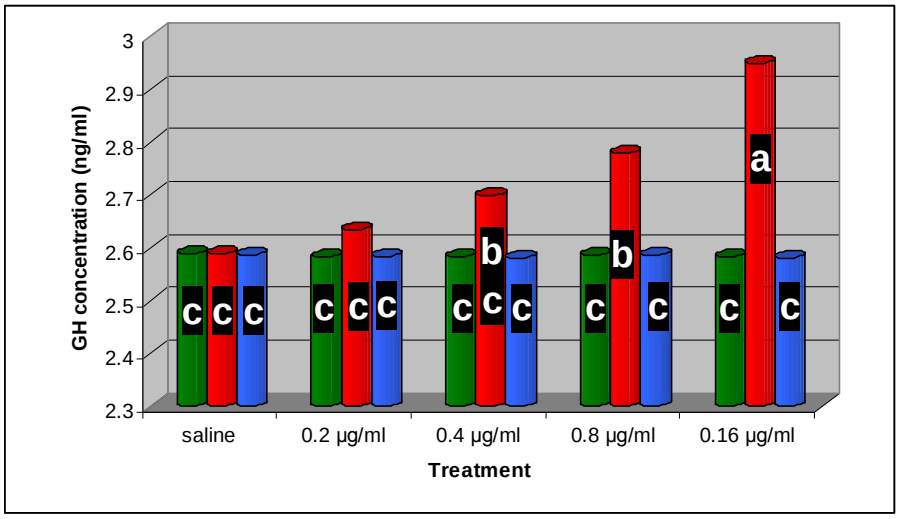

Figure 6 - Comparison of mean plasma concentrations of hormones triiodothyronine in different periods experiment with different treatments

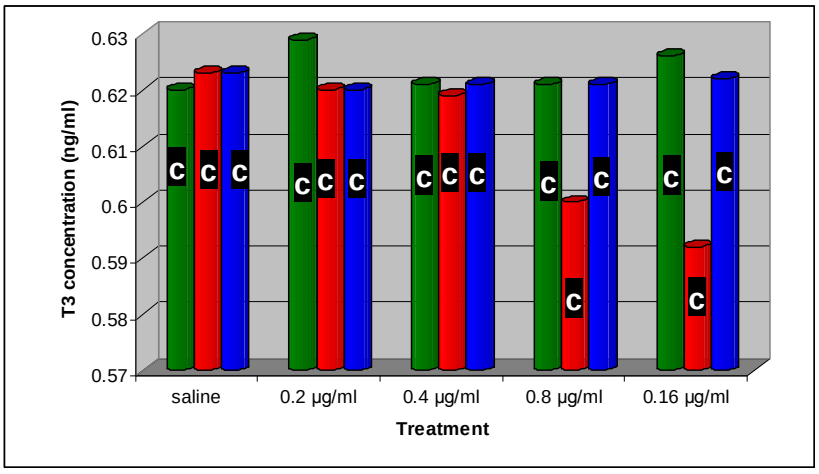

Figure 7 - Comparison of mean plasma concentrations of thyroxine hormone in different periods for different treatments

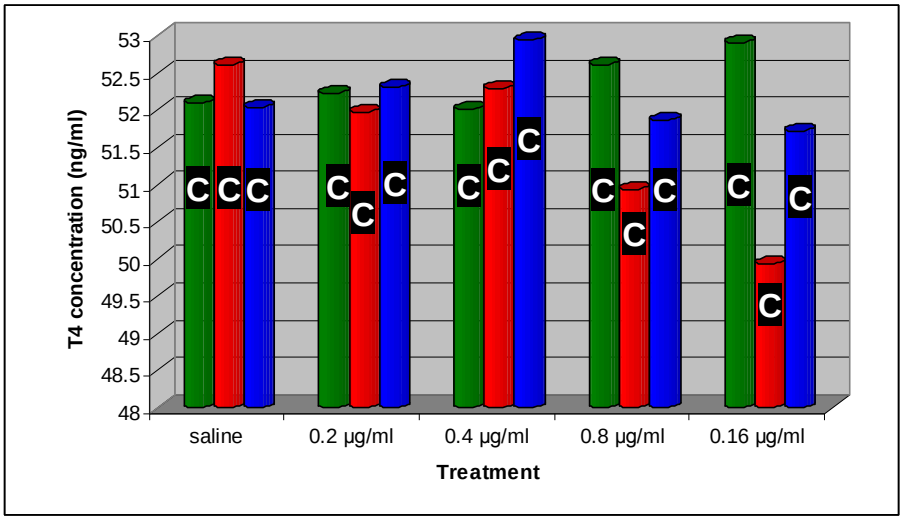

Figure 8 - Comparison of the mean percentage of milk protein between different periods in different treatments