

Hormonal Changes of Arabi Sheep Using Magnetized Water

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Abstract

This study was conducted at the animal field, Agriculture College, Al-Muthanna University, from 6/14/2020 until 9/14/2020, to know the hormonal changes of Arabi sheep using magnetized water. A total of 18 male Arabi lambs of a weaning age (four months) were used. The lambs were divided into three groups were as follows: **T1:** Was given natural water (flue water), which was prepared as a control group. **T2:** was given RO water (River Osmosis water). **T3:** was given magnetized water (water treated with magnetism). The level of hormones in the blood of male lambs was measured using the ELISA device. The hormones cortisol, growth hormone and testosterone.

The results showed that there were significant effect ($P < 0.05$) of the quality of water sources on the values of serum hormones, as the magnetized water group significantly outperformed the water group (R.O), which significantly outperformed the control group in the values of growth hormones and cortisol, the values of growth hormones and cortisol were not affected by the weeks of the study in the control group and the second group compared with the third group. The control group was not significantly affected by the weeks of the study, no significant differences in the second week of the different groups in the values of growth hormones and cortisol.

Keywords: Hormonal changes, Arabi sheep, magnetized water

Introduction

Sheep contribute to the national and global economy in terms of their animal products, as it was noticed that their numbers are increasing in the Arab and local areas, and it has great importance in agricultural production, because sheep reared was an important aspect of the agricultural sector, whether in terms of quantity or production, since upbringing was focused on obtaining meat or wool or both. The consumer prefers to eat sheep meat because it is characterized by its high quality, abundance of fat, and its possession of the Marbled Meat, meets his need for animal protein, which is important for building the body (Odeh, 2010, and Taha et al., 2011).

The success of livestock projects depends on the successful management and care of raising and managing animals in order to ensure increased production, avoid possible problems, among the most important operations is the watering of animals, as water is one of the basics of life and production. It is important for all vital bodily activities such as eliminating toxins and wastes,

transporting nutrients to body cells, and others, chemically one of the inorganic compounds in the animal's body that is included in all cells and tissues of the animal's body (Naito, 2004).

Water is continuously treated to improve its quality, portability and palatability. One of these treatments is the magnetizing process that improves a lot of sheep's productive characteristics after consuming the magnetically treated water, as weight gain and wool production, reducing the mortality rate and improving its health by strengthening the immune system by increasing the production of immune globulins and white blood cells, defends the body against pathogens (Magmopain, 2006).

There was another technique for water treatment called reverse osmosis, and locally with R.O, in which 99% of the dissolved salts (ions) are removed, organic matter and bacteria from water. The R.O membrane prevents contaminants by size and shape, the molecular weight prevented by R.O dinner may be greater than 200 Dalton, this type of water is beneficial to the healthy and productive animals (Al-Janabi, 2007).

Therefore, aims this study to determine the effect of different types of water on the hormonal characteristics, including the hormones cortisol and growth in Arabi lambs.

Materials and Methods

This study was conducted at the animal field, Agriculture College, Al-Muthanna University, from 6/14/2020 until 9/14/2020, to know the hormonal changes of Arabi sheep using magnetized water. A total of 18 male Arabilambs of a weaning age (three months) were used, entered the trial for a period of three months. Lambs were reared in three typical pens that have a stage that contains feeders and water ponds, and divided from the inside by iron partitions into three parts, two lambs were placed in each section of each treatment in hygienic conditions, and underwent a remedy program and a vaccine to ensure safety and freedom from diseases. The lambs were fed on a diet at a rate of 2% of their live weight, according to the National Research Council (NRC, 2005) method, consisting of barley 60%, bran 38%, urea 1.5%, table salt 0.5%, mix these materials manually, the group feeding system was used to feed the lambs. The experimental feeds were provided to the lambs twice a day, the first at seven o'clock in the morning and the second at two o'clock in the afternoon, with the remaining feed being collected the next day. In addition to providing coarse fodder throughout the study period, and between the feeding periods, the lambs were released into the barn scene to allow them freedom of movement and movement, as well as grazing on natural pastures daily for short periods of the day. The lambs were divided into three groups were as follows: **T1:** Was given natural water (flue water), which was prepared as a control group. **T2:** was given RO water (River Osmosis water). **T3:** was given magnetized water (water treated with magnetism).

Collecting blood samples:

Blood samples were collected from sheep directly from the jugular vein using sterile medical syringes, 5 ml were withdrawn for measuring hormone values, were placed in test tubes devoid of any anticoagulant, to allow blood to clot, in order to facilitate the isolation of serum, after leaving the tubes containing the blood by placing a little slant in the refrigerator at a temperature

of 4 ° C for a period of 24 hours, the blood was separated the next day, placed the tubes containing the blood in the centrifuge at a speed of 3000 rpm for a period of 15 minutes, the serum formed was withdrawn using a sterile medical syringe, the serum was placed in clean and sterile test tubes and was stored in the freezer at a temperature of -16 to -20 C, until all analyzes of the biological components and hormones were done.

Estimation of hormone concentrations in the blood serum of animals:

The level of hormones in the blood of male lambs was measured using the ELISA device, according to what is indicated in the instructions attached to the German Intraassay kit, and according to the method (Tsang *et al.*, 1980). The hormones cortisol, growth hormone and testosterone were measured according to the following steps:

25 µl of serum and standard solutions were added to each drill plate.

50 µL Estradiol -H.R.P.conjugate was added to the plate pits.

50 µl of Rabbit Anti-stradiol Reagent to the plate pits.

Stir the plate for 30 seconds.

Cover the plate with sticky paper and leave it for 90 minutes at room temperature.

Wash the dish with distilled water five times with an ELISA device.

100 µl of TMB-Reagent solution was added to each plate etching.

Leave the plate for 20 minutes at room temperature.

100 µl of Stop solution (Sulfuric acid) to the drill plate.

The results were read at a wavelength of 450 nm. The results were extracted from the standard curve for this purpose.

Statistical analysis :

The experiment data were analyzed using a complete randomized design (CRD), using the ready-made statistical program (SPSS, 2012), the averages were compared using the Duncan multiple range test (Duncan, 1955).

Results and Discussion

The results of the current study showed that there were significant differences between the experimental parameters of the current study, as it showed a significant effect ($P < 0.05$) of the quality of water sources on the values of serum hormones, as the magnetized water group significantly outperformed the water group (R.O), which significantly outperformed the control group in the values of growth hormones and cortisol. Likewise, the values of growth hormones and cortisol were not affected by the weeks of the study in the control group and the second group compared with the third group, whose value increased with the progression of the study weeks. The control group was not significantly affected by the weeks of the study. Whereas, the other groups were significantly affected, with increase or decrease in the weeks. Also, no significant differences appeared in the table in the second week of the different groups in the values of growth hormones and cortisol (Table 1).

Table (1) The effect of water quality on the values of body hormones.

Hormones	Treatments	Weeks of trail					
		2	4	6	8	10	12
Growth hormone (Ng. ml)	T1	0.09±39.60	0.11±39.80 b	0.05±39.35 b	0.07±39.42 b	0.04±39.90 a	0.07±39.30 b
	T2	0.06±39.75	0.09±39.85 a	0.15±39.40 a	0.12±39.50 a	0.06±39.85 b	0.11±39.20 c
	T3	0.08±39.70	0.21±39.80 b	0.28±39.22 b	0.18±39.45 b	0.22±39.80 b	0.18±39.95 a
Sig.		N.S	*	*	*	*	*
Cortisol (Ng. ml)	T1	0.22±39.43	0.09±39.45 c	0.07±39.60 a	0.08±39.42 b	0.06±39.20 a	0.09±39.55 b
	T2	0.33±39.30	0.07±39.50 b	0.05±39.50 b	0.07±39.45 a	0.04±39.40 b	0.18±64.60 a
	T3	0.18±b	0.14±39.55 a	0.21±39.60 a	0.05±39.44 b	0.08±39.60 a	0.06±39.50 b
Sig.		N.S	*	*	*	*	*

T1: Was given natural water (flue water), which was prepared as a control group. **T2:** was given RO water (River Osmosis water). **T3:** was given magnetized water (water treated with magnetism). N.S: Non- significant.* The vertically different small letters indicate the significant differences between the mean at a significant level 0.05.

These results were in agreement with (Mehtab et al., 2012) who showed that increasing the salts in the third group water leads to the transport of calcium ions into the cell, and the merging of secretory vesicles of the hormone with the cell membrane, which leads to an increase in secretion and release of growth hormone into the blood, it also agrees with Takahashi et al. (2011) who explained that high salt ion concentrations stimulate and influence the effective hypothalamic stimulants, including serotonin and dopamine, which work to stimulate and stimulate the hormone release in the blood. The reason for the high hormonal values in the third group may be attributed to the very low salt concentrations in the second and third groups, which in themselves are stimuli and inhibitors of many substances in the body such as somatostatin, which is due to the increase in the levels of hormones studied in more groups than others. This theory was supported by weight gain and stress-like states due to high saline effects, in order to affect the receptors of cortisol and growth hormone and increase their release into the blood.

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