



The effect of adding lycopene on improving the characteristics of diluted and cooled semen of Arabi rams

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Abstract

The experiment was conducted in the animal field of the College of Agriculture / University of Basrah / Karma Ali site for a period of three months from 10/15/2023 and in the forest 1/15/2024. Four Arabian rams were purchased from local markets in Basra Governorate, at ages ranging from 2.5 to 3 years and with similar weights. They were fed a diet consisting of a fodder mixture consisting of barley, bran, hay, and some mineral salts, clean water was provided to them inside the barn. The rams were trained in the process of collecting semen using the artificial vagina of rams in the animal field for a period of two weeks. After completing their training, semen was collected from them three times a month, and after the end of the training period, semen was collected three times a month. The study included adding different levels of lycopene (0,0.5,1,1.5) g/100 ml, and the tubes were closed tightly and placed in the refrigerator, and after the temperature stabilized at (5°C) for (0,24,48,72) hours, All characteristics of diluted and cooled semen were measured using a computer (CASA).

Key words: Lycopene , characteristics, semen, Arabi rams, Computer- assisted semen analysis(CASA).

The results of the study:

From the results, it is noted that T2 (lycopene 0.5 gm/100 ml) was significantly superior ($P<0.05$) to the rest of the parameters in individual motility and the percentage of live sperm from diluted and cooled semen. It also recorded the lowest values significantly ($P<0.05$) in the percentage of dead sperm. And the distorted ones, and the zero storage period (without refrigeration) showed significantly higher values ($P<0.05$) than the rest. Durations (24,48,72) hours. The T2 treatment was significantly ($P<0.05$) superior to the rest of the treatments in the values of straight line velocity (VSL) and the linearity of the sperm path (LIN) for diluted and cooled semen. Also, the zero period (without cooling) was significantly ($P<0.05$) superior to the rest of the periods (72, 48, 24). Hours in VSL ,LIN values.

I. Introduction

Fertility has many criteria, all of which depend mainly on the quality and quantity of semen obtained from the male. Likewise, the characteristics of the semen, especially the number of live sperm and their ability to fertilize, are among the most important characteristics of the semen used in artificial insemination (Vincent et al., 2012). Therefore, it is necessary that the sperm preserved by cooling, freezing, and liquefaction be intact with all their parts, especially the acrosome, its plasma membrane, and its sperm, in addition to that its progressive individual movement is rapid and at a level that makes it effective and able to reach the female reproductive tract and penetrate the egg membranes (Hossain and Lee, 2019). The diluted type and its composition also have an important role in maintaining the integrity of the sperm during cryogenic and freezing storage processes through its effect on the osmotic pressure of the sperm membrane and making the pH of the stored semen within neutral limits on the one hand. On the other hand, the diluted has an important role in releasing enzymatic antioxidants and reducing Reactive oxygen levels (ROS) As well as fatty peroxides (LOP), which are present in seminal plasma and sperm cytoplasm, thus increasing the vitality of sperm and their ability to fertilize during artificial insemination (Zamiri et al., 2010). In our current study, lycopene will be added to semen diluted

