

Effect of Birth Season and Lactation Stages on the Level of Some Hormones and Milk Yield of Holstein x Janoubi Cows

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Abstract. This study, conducted from October 1, 2022, to June 10, 2022, focused on 15 hybrid cows (Holstein × Janoubi) at different physiological stages, including pregnancy and milk production. The cows were categorized into early lactation (more than one day - 2 months), mid-lactation (2-4 months), and late lactation (4-6 months), further divided into three parities: 5 in parity I, 6 in parity II, and 4 in the third parity. Originating from Basra Governorate, specifically Nashwa Abu Al-Khasib and the Agricultural Research Station at the University of Basrah. Blood samples were collected every two months from the cows and their offspring to analyze hormone concentrations such as ghrelin, prolactin, oxytocin, estrogen, progesterone, and growth hormone at the Physiology Laboratory. Noteworthy findings include a significant increase in ghrelin concentration towards the end of the lactation phase across all birth parities, while prolactin peaked in the middle of the lactation phase before declining. Oxytocin levels rose significantly in the middle of lactation, notably in the first parity. Estrogen concentration peaked during mid-lactation for all parities, and progesterone levels notably increased in the final two weeks of pregnancy. Milk yield varied across lactation phases, with higher yields in the early and middle stages compared to the end stage. The third parity demonstrated significantly higher milk yields. The study revealed positive correlations between ghrelin, progesterone, and estrogen, and negative relationships with prolactin, calcium, globulin, total protein, albumin, and glucose during early lactation. These findings contribute to a better understanding of hormonal dynamics and milk production patterns in hybrid cows across different physiological stages and parities, offering insights into potential management strategies to optimize dairy production efficiency and animal welfare.

Keywords. Holstein × Janoubi, Physiological stages, Milk production, Hormones.

1. Introduction

Breeding dairy cattle serves as a means of livelihood and year-round occupation for livestock breeders [1]. Milk plays a crucial role in nourishing newborns, with approximately 80% water content in most milk types [2]. Cow's milk, specifically, comprises 87.4% water, with the remaining components consisting of 3.7% fat, 3.1% proteins, 4.9% carbohydrates, and 0.8% ash [3]. The composition of milk varies significantly across species, breeds, genetic structures within a breed, and stages of lactation. The production of milk and its constituents is influenced by the availability of

