Evaluation of acute phase proteins in clinically healthy dairy cows in perinatal period and during lactation

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Abstract

The estimation of acute phase proteins (APP), which are recognized as inflammation markers is a good method for animal health monitoring. Several factors such as obesity, age and sex are also known to modulate APP status. We evaluated the influence of pregnancy and lactation in 65 clinically healthy dairy Holstein-Friesian dairy cows, 2nd-4th lactation, chosen from 3 different dairy farms located in South West part of Poland. Bovine C-reactive protein (CRP), haptoglobin and fibrinogen were assayed using commercial ELISA kits. The highest values of CRP and haptoglobin were observed in cows during the first month after calving. The highest concentrations of fibrinogen was found in a group of cows prior to expected date of parturition and the level of this protein in blood plasma was decreasing during lactation. The significant differences of analyzed APPs among cows before delivery, during first month after calving and in lactation (1-3 months after delivery) suggested that factors like pregnancy and stage of lactation would have an influence on their concentration.

Key words: cows, acute phase proteins, perinatal period, lactation

Introduction

Through generations cattle were selected focused on increasing productivity (high volumes of milk), but now health and animal welfare also became very important. The maintenance of a good health is the most essential requirement having strong impact on cattle welfare. A key role of inflammation in several infectious and also metabolic diseases has been documented. Cytokines produced during inflammation such as necrosis factor alpha (TNFα), interleukin 1β and interleukin 6 act through many signaling cascades producing often similar responses of organism. Cytokines are acting as messengers between the local site of inflammation (injury) and liver in which the synthesis of the acute phase proteins take place. Most of these proteins have multiple functions and targets. They are non-specific inflammation markers and can

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