SOMATIC CELL COUNT, ELECTRICAL CONDUCTIVITY AND BIOCHEMICAL PARAMETERS IN MASTITIS MILK IN COWS

H. Yildiz¹, E. Kaygusuzoglu¹ and H. Simsek²

¹Department of Obstetrics and Gynaecology, ²Department of Physiology, Faculty of Veterinary, University of Fırat, Elazig, Turkey-23159.

(Received : 14-06-2004; Accepted : 02-09-2005)

Subclinical mastitis can be diagnosed bacteriologically or with some biochemical parameters (Na, K, Cl, lactose and proteins), electrical conductivity (EC), total bacterium counts, somatic cell counts (SCC). California Mastitis Test (CMT) of the milk (Charjan et al., 2000; Pednekar et al., 1992). It has been reported (Kitchen et al., 1980; Charmings et al., 1984) that infection changes the permeability of the vessels in udder tissue which causes an increase in Na and Cl levels and leucocytes number but a decrease in K level, lactose and fat rates, that leads to an elevation in SCC and EC. The aim of this study is to find out the relationship between SCC, EC, Na and K levels in the milk of the cows with subclinical mastitis.

Materials and Methods

A total of 36 cows between 2-9 years old were used for the study. According to the criteria of Schalm et al. (1971) 41 udder quarters belonging to 15 cows were CMT negative and 56 udder quarters of 21 cows were CMT +1 and +2 positive and were identified as subclinical mastitis. The EC of the milk samples obtained from the CMT positive udders were tested using Milk Checker device (Eisai Co. Ltd. Japan). Establishment of SCC in milk was done following the protocol of the International Dairy Federation (IDF). The milk samples for bacteriologic examination were obtained in aseptic condition after washing the udders of each cow with warm water and swabbing the teats with 70% ethyl alcohol.

Ten ml blood samples was obtained from each cow and kept at room temperature until the serum was separated. Then, the serum was centrifuged at 3000 rpm for 15 minutes and stored in sterile tube at -20°C until being analyzed for mineral substance. Ten ml milk sample taken aseptically from each udder were centrifuged at 3000 rpm for 20 minutes, the cream layer accumulated at upper part of tubes was removed carefully and the remaining part of milk sample was stored in the sterile tubes at -20°C until used.

Potassium (K) and Sodium (Na) levels in the blood and milk serum samples were determined with Petracourt PFP1 brand Flesmphotometry device (Joseph and Roger, 1985). The data obtained during this study were evaluated statistically with ANOVA and Mann Whitney U test using SPSS computer package program (Hayran and Ozdemir, 1996).

Results and Discussion

Milk EC, SCC, Na and K Values of milk in healthy and subclinical mastitis cows have been summarized in the table.