Subclinical hypocalcemia is a metabolic disorder that occurs with a high frequency in multiparous dairy cows and may induce other diseases. The aim of this study was to compare the serum concentration of Ca, calcidiol, calcitriol, NEFA’s, BHBA and colostrum’s Ca in primiparous and multiparous dairy cows. Fourteen primiparous and 16 multiparous Holstein cows were used. Animals had a body condition score (BCS) between 3.25 and 3.75 at calving and received a balanced prepartum and postpartum diet and water ad libitum. Blood samples were collected between 5 and 2 d prepartum and 6 h, 12 h, 7 d and 21 d postpartum. Serum concentrations of calcidiol, calcitriol, beta-hydroxybutyrate, Ca, P, Mg, non-esterified fatty acids, and total secretion of Ca in the colostrum from the first postpartum milking were assessed. Nearly 66% of the primiparous and 71% of the multiparous cows had subclinical postpartum hypocalcemia. No animals developed parturient paresis. Prepartum serum Ca was higher for primiparous cows, decreased in both groups at 6 h and 12 h to and returned to baseline values 7 d postpartum. The prepartum serum P levels were higher in primiparous cows and decreased after 6 h postpartum in both groups. In both groups, postpartum Mg levels increased slightly over the prepartum levels and in all samples were above 0.65 mmol/L. Calcidiol and calcitriol concentrations were equal on day 5 prepartum in both groups. In multiparous cows, calcidiol and calcitriol levels increased at 6 h postpartum and remained elevated at 12 h postpartum; there were no changes in primiparous cows for these analytes. The total secretion of Ca in the colostrum from the first milking was similar in both groups and positively correlated with serum Ca at 6 h and 12 h after calving. The concentration of NEFA’s before calving was below 0.4 mmol/L in both groups. After calving, BHBA concentrations did not indicate the presence of subclinical ketosis. It is concluded that increases in the calcidiol and calcitriol concentration postpartum were a normal response to the hypocalcemia only in multiparous cows. The total Ca secretion in the colostrum of the first milking does not reflect the grade of hypocalcemia. In the present study, neither Ca content in colostrum, or serum levels of calcidiol, calcitriol, P, Mg, non-esterified fatty acids and beta-hydroxybutyrate explained postpartum hypocalcemia in dairy cows.

Keywords: Vitamin D, hypocalcemia, dairy cows