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Improving productive performance of Holstein dry cow through supplementing rumen-protected amino acid L-Tryptophan (RPT)

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Introduction

Dry period of dairy cow is a crucial time for strengthening resistance for diseases such as mastitis, body tissues for parturition, and the health of offspring. Especially, previous researches have revealed that the digestive tract was under the press on account of rapid growth of fetal along with imbalance of hormone regulation in dry cow, which further impacts the lactation and health of offspring. L-Tryptophan is a precursor of Niacin (vitamin B_3), serotonin and melatonin. Moreover, tryptophan increases of pancreas alpha-amylase in the small intestine of ruminants, which elevates the starch digestibility. Meanwhile, it is also known as an essential amino acid for protein synthesis and milk productivity.

Aim

The effect of rumen-protected amino acid L-Tryptophan (RPT) on the dry cow is not clear. Therefore we investigated the effect of RPT on the improvement of productive performance during the late pregnancy period in Holstein cow.

Methods

Cows were supplied diets with total mixed ration (TMR), roughage, concentrates and RPT based on NRC (2001). Calves born to RPT-fed dry cows were fed colostrum for 3 days, and then normal milk was provided for 8 weeks. Dietary intake of the dry cow, weight of newborn calves, milk components were measured and blood analysis.

Results

RPT improved the feed intake in dry cow ($P<0.05$), and high numerical value the milk yield and milk fat. In calves born to RPT-fed dry cows, BW at birth and difference in average weight during 8 weeks had slightly high numerical value compared to control group. From the blood parameter results, monocyte number and serum glucose levels in treatment group were higher than in control group ($P<0.05$).

Conclusion

Taken together, the results imply that RPT can be utilized as a positive additives in dry period which occurs hormonal unbalance, appetite diminution, and disturbance of production in cow.