



KEY WORDS

- ✓ Beef cattle
- ✓ Fat
- ✓ Starch
- ✓ Simmental
- ✓ Holstein friesland

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THE EFFECT OF USING DIFFERENT ENERGY SOURCES IN BEEF CATTLE RATIONS ON DIGITAL CUSHION THICKNESS AND FOOT HEALTH

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THESIS ABSTRACT

This study aimed to investigate the effects of using different energy sources in the rations of two different beef cattle breeds on dry matter consumption, feed conversion ratio, fat pad thickness and foot health. The study was conducted between January and July 2020 at Bomonti Farm (Kırklareli, Turkey). Fourteen Holstein Friesian beef cattle (405 ± 50 kg initial body weight) and fourteen Simmental beef cattle (450 ± 50 kg initial body weight) were randomly divided into four groups and each group consisted of 7 animals. All animals were fed with fat or starch-based total mixed ration (TMR) based on energy sources. The rations in the groups were designed as isocaloric and isonitrogenous. At the end of the study, the animals were sent for slaughtering. After the animals were slaughtered, 4 feet of each animal were collected. The fat pads on the collected feet were visualized by ultrasonography. Leftover ration in front of the animals from the beginning of the study were collected and daily dry matter consumption and feed conversion ratios were calculated based on groups. Statistical analyses were performed using SPSS (v28.0) package program and Medcalc (11.5, 2011) program. ONE WAY ANOVA was used to evaluate the effects of fat and starch on performance. Roc Curve Analysis was used to evaluate the relationship between mononuclear cell infiltration and fat pad thickness in collected feet. Feed conversion ratios of Simmental Starch (SN) (0.14 ± 0.003) and Holstein Starch (HN) (0.13 ± 0.006) groups were found to be higher than Simmental Fat (SY) (0.10 ± 0.008) and Holstein Fat (HY) (0.11 ± 0.01) groups. Fat pad thickness of animals, HY (1.2104) was higher than those fed HN (1.0993) and SN (1.1293) ($P < 0.05$). Fat pad thickness in the SY group (1.2289); It was found to be higher than the HN (1.0993) and SN (1.1293) groups ($P < 0.05$). There was no difference between the groups in terms of the relationship between cell infiltration and pad fat thickness. According to the results of this study, it was concluded that feeding with fat based TMR may have a positive effect on foot health.

APPLICATION AREAS OF THE THESIS RESULTS

The positive effects of by-pass fat addition to the finishing rations of fattening cattle on foot health and digital cushion will contribute to the prevention of laminitis, one of the most important problems of dairy and beef cattle, considering its effects on the digital cushion. It was concluded that feeding with oil-based TMR may have a positive effect on foot health in fattening calves.

ACADEMIC ACTIVITIES

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