Grazed chicory, plantain, or ryegrass-white clover alters milk yield and fatty acid composition of late lactating dairy cows

M. C. Mangwe, R. H. Bryant, M.R. Beck, A.E. Fleming, and P. Gregorini

Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 7647, Canterbury, New Zealand

ABSTRACT

Diet and extent of biohydrogenation in the rumen have significant effects on milk fatty acid composition. The aim of this research was to compare milk fatty acid composition of cows grazing conventional perennial ryegrass/white clover pasture (RGWC), with alternative forages: chicory or plantain. Fifty-four cows, balanced for milk solids, days in milk and body weight, were divided evenly into replicated groups of six cows/group. Cows grazing chicory or plantain had similar estimated dry matter intakes (17.7 kg DM/cow/d) and MS yield (1.93 kg MS/cow/d) which was greater \((P<0.05)\) than for cows grazing RGWC (15.6 kg DM/cow/day and 1.65 kg MS/cow/day). Milk produced from cows grazing chicory or plantain contained greater proportions of Omega-3 FA than that of RGWC \((P<0.01)\), despite lower Omega-3 FA in herbage. Ryegrass/white clover increased the percent of conjugated linoleic and vaccenic acids in milk compared to that produced from herbs \((P<0.01)\). This reflects the greater percentage of \(\alpha\)-linolenic acid in RGWC \((P<0.02)\) compared to forage herbs. The changes in FA profile from the herbage to the milk suggests less biohydrogenation in cows grazing the herbs. Forage herbs demonstrated the potential benefit to alter milk FA composition, while increasing milk production.