

Water Balance and Fecal Moisture Content in Suckling Calves as Influenced by Free Access to Dry Feed

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Holstein bull calves were used to examine the effect of dry feed on water balance and fecal moisture content during the suckling period. In Experiment 1 (n = 20 calves), free access to concentrate and timothy hay decreased urine volume and increased apparent water retention, fecal water excretion, and fecal moisture content by 2 wk, although daily amounts of milk replacer also affected water balance when DMI from dry feed was low. In Experiment 2 (n = 20 calves), free access to concentrate and hay from wk 1 increased reabsorption of water from renal tubules during wk 2, resulting in reduced urine volume and increased plasma volume. In Experiment 3 (n = 10 calves), supplementation of 500 g/d of milk replacer plus free access to concentrate and hay from wk 1 increased plasma antidiuretic hormone by 2 wk compared with the concentration in calves receiving 200 g/d of milk replacer alone. Plasma antidiuretic hormone concentrations were highly correlated with plasma concentrations of acetate and ketone bodies but not with glucose and urea. In Experiment 4 (n = 16 calves), apparent water retention and fecal moisture content during wk 2 were increased by free access to concentrate from wk 1 but were not affected by rice straw as an inert bulk source.

Key Words: dry feed • water balance • antidiuretic hormone • suckling calves

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