Effect of type of gradual weaning program on feed consumption and growth of dairy calves

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Weaning is very stressful for dairy calves. To improve weaning success, it is essential a proper weaning strategy is utilized to improve performance and welfare during this transition. The objective of this study was to investigate how two gradual weaning programs affect intake and growth of dairy calves during the milk-feeding (d 1-42), weaning (d 43-56), and post-weaning (d 57-70) periods. Sixty Holstein heifer calves were housed in individual pens and randomly assigned to 1 of 2 treatments: continuous gradual weaning program (CG) or multi-step gradual weaning program (MSG). Calves were offered 12.5L/d of milk replacer (in 2.5 L meals, 5x/d) by an automated rail milk feeder (AMF) until d 43, when weaning commenced according to their assigned treatment. Calves had access to ad libitum water from birth and starter ration of mixed concentrate (95%) and chopped (2.54 cm) wheat straw (5%) from d 5. Calves on CG program were weaned from 12.5L/d to 2.0L/d in small, equal increments until d 57. Calves on MSG program were offered 10L/d for 3 d, 8L/d for 4 d, 6L/d for 3 d, and 3L/d for 4 d until d 57. At d 57, all calves did not receive milk and were monitored until d 70. Feed and water intakes were measured daily and milk intakes were recorded automatically by the AMF. Calf BW was measured 2×/wk. Milk intake was similar during the milk-feeding period (CG=9.1L/d, MSG=8.9L/d; P=0.63). During weaning, milk intake varied by day depending on treatment (P<0.01), but on average CG calves consumed more milk than MSG (6.7 vs 6.1 L/d; P<0.01). Feed intake did not differ between treatments in the milk-feeding (CG=0.063 kg/d, MSG=0.060 kg/d; P=0.66), weaning (CG=0.75 kg/d, MSG=0.80 kg/d; P=0.54), or post-weaning (CG=2.97 kg/d, MSG=2.91 kg/d; P=0.68) periods. Growth rates did not vary by treatment during the milk-feeding (0.99±0.04 kg/d; P=0.88) and post-weaning (1.18±0.06 kg/d; P=0.18) periods. Growth was subject to a treatment×wk interaction (P=0.005) during weaning, resulting in CG calves growing at 1.09 kg/d during wk 7 and 0.60 kg/d in wk 8, versus MSG calves growing at 0.95 kg/d in wk 7 and 0.71 kg/d in wk 8.

Implications: These results indicate that when feeding a high level of milk to dairy calves, there is no difference in intakes or growth when weaned by a continuous gradual weaning program compared to a multi-step gradual weaning program. Regardless, gradual weaning has been demonstrated to be beneficial for calf performance and welfare and, therefore, some type of gradual weaning program is necessitated to ease the transition off milk.