

# Determination of the optimal inclusion rate of canola meal in starter mixtures for dairy calves

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The objective of this study was to determine the optimal inclusion rate of canola meal (CM) in starter mixtures for Holstein calves. Newborn heifer calves (n = 50; initial body weight (BW) of  $39.8 \pm 3.4$  kg) were assigned to 1 of 5 treatments where the CM inclusion rate increased to substitute 0, 15, 30, 45, or 60% of the dietary CP supplied by soybean meal (SBM). The CM was included by replacing SBM resulting in CM dietary inclusion rates of 0, 5.2, 10.4, 15.7, and 20.7% DM, respectively. Calves were fed milk replacer at 15% BW. Milk replacer was prepared by mixing 150 g DM/L. Starting on  $35.3 \pm 2.4$  d of age, calves were exposed to a 3-wk weaning protocol. Starter was provided ad libitum from 8 until 71 d of age. Milk replacer and starter intake were recorded daily, and BW was recorded weekly. Ruminal fluid was sampled through an esophageal tube on  $70.2 \pm 0.8$  d of age and pH of the sample was measured. Data were analyzed to determine whether increased inclusion of canola meal affected performance of the calves.

Milk replacer intake did not differ among treatments ( $P \geq 0.46$ ). When evaluated over the entire study, starter intake tended to decrease linearly ( $P = 0.055$ ) with increasing CM inclusion rate resulting in a 158 g/d reduction between the diets containing 0 and 60% of the CP as CM. As well, linear reductions for starter intake with increasing CM inclusion rates were detected during the step-down and post-weaning phases. Despite the reduction in starter intake, average daily gain did not differ among treatments with calves gaining 0.88 kg/d ( $P \geq 0.26$ ). Likewise, cumulative growth did not differ among treatments averaging 61 kg ( $P \geq 0.22$ ). Feed efficiency post-weaning was not affected by treatment ( $P \geq 0.38$ ), and neither was ruminal fluid pH ( $P \geq 0.28$ ).

Implications: Increasing CM inclusion in the starter tended to decrease starter intake; however, average daily gain and feed efficiency were not affected. Canola meal can be included in starter mixtures for dairy calves to replace 45% of the SBM without affecting performance while still reducing feed cost.