The Nutritional

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CONSULTANT'S DIGEST

Proven Performance of Wheat & Plasma Proteins

Calf performance when fed milk replacers using wheat protein as a partial replacement for whey protein has shown mixed results in various trials. That can be expected to some extent because there are different sources of wheat protein and different milk replacers in which it was used. Similarly, plasma protein sources have shown mixed results. Hence, a calf trial was done in which both a hydrolyzed wheat protein source and a plasma protein source were used in the same milk replacer as a partial replacement for whey protein.

Non-medicated milk replacers containing 20% fat and 20% protein were used, with a wheat protein source and plasma protein each providing ¼ of the protein in the treatment, versus an all-milk control.

The feeding program was 10 oz of milk replacer in 2 quarts of water fed 2x/day for 5 weeks, followed by 1x/day feeding of 2 quarts for 1 week, and then full weaning at the end of 6 weeks. Water and calf starter were fed free choice and starter intake was measured daily.

All calves were housed in separate hutches until 2 weeks after weaning when the trial was completed. Body weights were recorded at the start of the trial and weekly until the end of the trial. Scour scores were recorded for the first 6 weeks.

The trial was conducted with 20 heifer calves per control and treatment at a research facility. Small but similar initial body weights were due to calves being heifer calves from first-calf heifers. Results are shown in the following table.

	Control	Treatment
Week 1: Serum protein, g/dl	5.47	5.13
Week 1: Initial body weight, lb	77	79
Week 6: Weaning weight, lb	113	119
Weeks 1 – 6: Avg. daily gain pre-weaning, lb	0.86^{A}	0.94^{B}
Week 6: Final body weight, lb	135	144
Weeks 7–10: Avg. daily gain post-weaning, lb	1.56	1.79
Weeks 1–10: Avg. daily gain total period, lb	1.03^{a}	1.15^{b}
Weeks 7–10: Starter intake pre-weaned, lb	32^{A}	43^{B}
Weeks 7–10: Starter intake post-weaned, lb	51	51
Weeks 1–6: Total scour days	17	5
Weeks 1–6: Treatment days	12	3

^{AB} $P < 0.06$ for pre-weaning daily gain and $P < 0.10$ for starter intake pre-weaning.
^{ab} $P < 0.01$

Initial body weights and serum protein levels were not different for control vs. treatment. Average daily gain over the entire trial was greater ($P < 0.01$) for treatment vs control, and this difference was also noted by weeks. Daily gain at 6 weeks weaning was greater ($P < 0.06$) for treatment vs control. Starter intake pre-weaning was greater ($P < 0.10$) for treatment vs. control. Scour days were numerically less ($P < 0.22$) for treatment vs. control.

The combination of this wheat protein source and plasma protein source replacing ½ of whey protein in a milk replacer resulted in more body weight gain and starter intake with fewer scour and treatment days for Holstein heifer calves.

Fast Facts

- Both hydrolyzed wheat and plasma proteins provide solid calf performance in milk replacers
- This protein combination can be an attractive economic alternative to all milk replacers.

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