FrontLine®
TECHNICAL INFORMATION FOR TODAY'S FEED PROFESSIONAL

Alternative Proteins in Milk Replacers

The protein fraction of any milk replacer is very important due to its major contribution to the growth of any young animal, and because minor changes in the quality of the proteins present or the concentration of the proteins can have a profound impact on the growth rate and health of the animal involved. As milk protein costs climb, and business conditions become more and more competitive, interest in alternative protein sources has become more and more intense.

One of the key objectives in marketing calf milk replacers is to provide nutritionally adequate formulas that significantly lower the cost of raising calves, compared to whole milk feeding. While calf performance is often maximized with all-milk formulas, the best cost/benefit scenario continues to be seen in the use of soy protein concentrate in calf milk replacers. In controlled research, weight gains of calves raised on soy protein concentrate based milk replacers averaged only 2.4 lbs. (5%) less at 6 weeks of age than calves raised on all milk formulas, yet the milk replacer cost can be as much as 20% less.

Numerous research trials have been conducted by many different sources over the years, and the literature is in agreement that traditional soy flour products in general are markedly inferior to soy protein concentrate or soy protein isolate as a source of protein.
The AAFCO definitions of several alternative protein sources are shown here.
Definitions:

Soy protein isolate is the major proteinaceous fraction of soybeans prepared from dehulled soybeans by removing the majority of non-protein components and must contain not les that 90% protein on a moisture-free basis. Soy protein isolate is fiber-free.

Soy protein concentrate is prepared from high quality sound, clean, dehulled soybean seeds by removing most of the oil and water soluble non-protein constituents and must contain not less than 66% protein on a moisture-free basis.

Soy flour is the finely powdered material resulting from the screened and graded product after removal of most of the oil from selected, sound, cleaned and dehulled soybeans by a mechanical or solvent extraction process. It must contain not more than 4.0% crude fiber (50% protein).

Protein-modified soy flour is a soy flour specially processed to increase digestibility and decrease antigenicity (50% protein).

Wheat protein isolate is concentrated protein source (80% protein) processed from wheat gluten. It is water-soluble and contains no known anti-nutritional factors.

Animal plasma is a concentrated source of protein obtained by removing the red and white blood cells from fresh whole blood.
The resulting plasma is then dried (70% protein).

Milk Products
The Milk Replacer Source™
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