

EVALUATION OF A FORMULA FOR HAND-REARING RED PANDAS (*AILURUS FULGENS*)

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Abstract

Physiological and behavioral benefits indicate the preference of maternal rearing red panda (*Ailurus fulgens*) neonates; however, there are circumstances that necessitate surrogate (human) or supplemental care and feeding.

The suggested formula, powdered canine milk replacer (Esbilac[®]) reconstituted with water to 19.6% solids, incubated with a lactase-enzyme preparation (Lactaid[®]), has resulted in constipation associated with inspissated feces in some animals.¹ Additionally, the lactase-enzyme preparation is no longer commercially available in the United States, although marketed internationally, making practical use of the enzyme preparation problematic.

A modified formula, using equal proportions of two commercially available products: a powdered canine milk replacer (Esbilac[®]) and a higher whey protein, lower casein protein powdered human milk replacer (Enfamil[®]) developed to address similar clinical signs in sun bears (*Helarctos ursinus*) and giant pandas (*Ailuropoda melanoleuca*), was used for rearing two red panda neonates (Table 1).² The reconstituted formula contained 19.6% solids, but was not predigested with a lactase-enzyme preparation.

Surrogate care was initiated on d 24 and 77. The suggested formula was initially offered. Both specimens became constipated producing inspissated feces with apparently undigested curd (casein). The modified formula was increasingly introduced from d 35-67, and d 81-105, respectively.

Constipation gradually resolved with an apparent increase in fecal moisture content. There was a concurrent reduction in the visual presence of undigested curd. The neonates were weaned at 164 and 174 d, respectively.

High casein milks produce a strong curd in the neonate's stomach. Although an adaptation of certain species (e.g., bovids), in other species, the increasing size of the curd can exceed the digestive capacity of the species. In extreme cases, the undigested curd (lactobezoar) can physically obstruct the gastrointestinal tract.

The modified formula supported apparently normal neonatal development to weaning with desired changes in fecal characteristics to address constipation associated with the currently suggested formula.

LITERATURE CITED

1. Red panda hand-rearing guidelines. Red Panda SSP. <http://redpanda.cincinnati-zoo.org/slguid.htm>. Accessed 05-April-2007.
2. Edwards, M.S., R.P. Wei, J. Hawes, M. Sutherland-Smith, C.X. Tang, D.S. Li, D.M. Hu, and G.Q. Zhang. 2006. The neonatal giant panda: hand-rearing and medical management. *In: Giant Panda Biology, Veterinary Medicine and Management*. Cambridge University Press, New York, NY. Pp 315-333.

Table 1. Ingredients and selected nutrient composition of a formula for feeding red panda cubs.

Ingredient	Amount, g	
Esbilac ® powder	10	
Enfamil ® low iron powder	10	
Water	80	
Composition	As-fed basis	Dry matter basis
Total solids, %	19.6	100.0
Energy, kcal ME g ⁻¹	1.11	5.64
Crude protein, %	4.6	23.2
Whey, %	1.35	6.90
Casein, %	3.51	17.90
Whey:casein	28:72	-
Crude fat, %	7.1	36.1
Total carbohydrates, %	7.1	36.2
Ash, %	0.8	4.5
Calcium, %	0.142	0.73
Phosphorus, %	0.103	0.52