

## MOLYBDENUM RESPONSIVE SYNDROMES IN CHICKENS

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Two syndromes which occur sporadically in commercial poultry units have been reported to be molybdenum (Mo) responsive. These are the ginger hair, clubbed down syndrome in newly hatched chicks (Payne, 1977a) and the femoral degeneration and scabby hip syndrome in broiler chicks (Payne and Bains, 1975). These data suggested that the availability of Mo from poultry diets occasionally fell below requirement. We have attempted to produce eggs of low Mo content by feeding diets of low Mo content (0.4 µg Mo/g of diet) with and without added tungstate (WO<sub>4</sub>), sulphate (SO<sub>4</sub>) and copper (Cu), which have been identified as Mo antagonists in other systems. Similar diets containing added Mo (MoO<sub>4</sub>) were also fed. The Mo status of the hens was monitored by measuring the Mo content of the eggs, and the Mo level and xanthine dehydrogenase (XDH) activity of liver tissue. The Mo content of eggs produced by hens on the low Mo diet were not significantly reduced by the antagonists, but SO<sub>4</sub> and WO<sub>4</sub> both lowered egg Mo levels on the high Mo diet (Table 1). There were no significant differences (P<0.05) in the XDH activities in the livers of hens fed the high and low Mo diets, and the effects on liver Mo levels were similar to those on egg levels, although the results for diets containing tungstate are not yet available.

Eggs from hens fed the low Mo diet (0.4 µg/g) with added SO<sub>4</sub> (3 mg/g) hatched and the chicks developed normally when fed diets containing 0.06 µg Mo/g.

In current experiments we are rearing chicks derived from hens of low Mo status in plastic isolators, using diets containing only 0.03 µg Mo/g. No evidence of Mo deficiency has been observed to date.

In other experiments, attempts to reproduce the Mo responsive loss of feathers condition in broilers observed in this laboratory by Payne (1977b) have been unsuccessful.

TABLE 1

	Mo levels			
	µg Mo/g yolk *		µg Mo/g wet liver *	
	Basal diet	Basal diet + 8 µg Mo/g	Basal diet	Basal diet + 8 µg Mo/g
No addition	0.29 a	2.67 b	0.55 a	1.80 b
0.5 mg Cu/g diet	0.40 a	2.66 b	0.61 a	1.95 b
3 mg SO <sub>4</sub> /g diet	0.18 a	0.46 a	0.49 a	0.65 a
1.3 mg WO <sub>4</sub> /g diet	0.16 a	0.63 a	Not available	
	(P<0.05)		(P<0.05)	

\* Means not containing common superscripts differ significantly (P<0.05).

## REFERENCES

- Payne, C.G. (1977a). Involvement of molybdenum in feather growth. *Br. Poult. Sci.* 18: 427-432.
- Payne, C.G. (1977b). Molybdenum responsive syndromes of poultry. *Proc. 3rd Int. Symp. on Trace Element Metabolism in Man and Animals*, 3.
- Payne, C.G. and Bains, B.S. (1975). Femoral degeneration and scabby hip syndrome in chicks. *Vet. Rec.* 97: 436-437.