

**TOXICITY OF ERGOTS OF *CLAVICEPS PURPUREA* IN CHICKENS
SUBJECTED TO HEAT STRESS**

B.J.K. BAKAU and W.L. BRYDEN

Claviceps purpurea was recorded in Australia last century but there have been no reported cases of classical gangrene ergotism in this country (Culvenor 1974). However, during the autumn of 1986 there were dramatic losses in productivity in both beef and dairy cattle in New South Wales from idiopathic bovine hyperthermia. The hyperthermia was only evident during the hottest part of the day. The cause of the condition was traced to grain contaminated with ryegrass infected with the ergot of *C. purpurea* (Burgess et al. 1986). The unusual nature of the outbreak of ergotism in cattle prompted the following trials which were undertaken to ascertain the effects of ergot in chickens. In the trials four groups of eight male chicks were placed on each experimental diet. In the first experiment cross-bred layer strain cockerels were fed graded levels of ergot for 3 weeks from day-old and the results are shown below.

Ergot (g/kg diet)	Weight gain (g)	Food intake (g)	Food conversion ratio (g)	Foot Score*
0	198 ^a	330 ^a	2.17 ^a	0
5	178 ^{ab}	300 ^{ab}	2.27 ^a	0
10	150 ^{bc}	280 ^{bc}	2.69 ^b	1.2
15	122 ^c	270 ^{bc}	3.55 ^c	1.7
20	108 ^c	250 ^c	4.03 ^d	2.0
SEM	17	74	0.36	

Means in the same column with different superscripts are significantly different ($P < 0.05$).

* Foot score assessed on a scale from 0 (no lesions) to 5 (very severe gangrene).

Low dietary levels of ergot (5 g/kg) reduced growth and food conversion efficiency although a higher level (10 g/kg) was required to induce gangrene, a lesion often associated with ergotism. In a subsequent trial with a cross-bred layer strain and a broiler strain it was demonstrated that chickens of both strains are equally susceptible to ergot ingestion. In a third experiment 21 day-old cross-bred cockerels were fed graded levels of ergot and housed at a constant 22°C. Half of the birds were subjected to ambient temperature of 37°C for 9 hr each day. Feeding ergot levels up to 20 g/kg resulted in a significant ($P < 0.01$) temperature x ergot interaction with respect to weight gain, food intake and food conversion efficiency. Birds at the higher ambient temperature were more adversely affected but there was no difference between groups in body temperature. The most noticeable feature of the experiment was that heat stressed birds had no foot lesions whereas those maintained at 22°C had similar foot scores as birds in the first trial. This response may relate to changes in blood flow to the legs of birds subjected to different temperatures while ingesting ergot.

BURGESS, L.W., BRYDEN, W.L., JESSUP, T.M., SCRIVENER, C.J. and BARROW, K.D. (1986). *Proc. Nutr. Soc. Aust.* 11: 120.
CULVENOR, C.C.J. (1974). *Aust. Vet. J.* 50: 69.