

A RAPID ASSAY TO DETERMINE METABOLISABLE ENERGY
FOR BROILER CHICKENS

R.J. JOHNSON and P.J. EASON

Rapid metabolisable energy (ME) assays which use adult cockerels are now widely used in the poultry industry. These are considerably different from the conventional assays which have routinely used young chickens. From a production viewpoint it is important that ME values determined with adult birds are accurate for young chickens. However, because ME increases with age in poultry (Sibbald, 1982), the use of adult ME values may be questionable for young chickens. Since rapid assays have a number of advantages over conventional assays in aspects such as amount of sample, labour and time, we report here the testing of a previously developed (Johnson and Eason 1986) rapid assay for young broiler chickens relative to a conventional assay and the Farrell rapid assay (Farrell 1978).

Twenty-four male broiler chickens 35d of age were trained over a 7d period to rapidly consume food by imposing two 2h feeding periods each day. At 42d of age, birds were starved for 42h then offered for a 1h period either 0, 20, 40, 60, 80 or 100g of a test diet (corn/soyabean meal) and excreta were collected for 42h. A second group of 24 chickens of the same age were used in a conventional assay which involved pre-feeding for 3d followed by total excreta collection for 3d. These birds received either 20, 40, 50, 60, 80 or 100g of test diet each day. Adult crossbred (WLxA) cockerels were starved for 42h then offered for a 1h period either 40, 60, 80, 100, 120 or 140g of test diet followed by a 42h excreta collection period.

AME varied in a curvilinear manner with increasing food intake in the rapid broiler and adult cockerel assays, but was not influenced by level of food intake in the conventional broiler assay. Results are shown in the Table.

Table. AME (MJ/kg) and AME corrected to zero nitrogen (N) retention (AME_N) of a test diet determined by conventional and rapid broiler assays and the Farrell rapid adult cockerel assay.

	Conventional broiler ¹	Rapid broiler ²	Rapid cockerel ²
AME	12.534(±0.323)	12.52	12.92
AME_N	12.132(±0.304)	12.17	12.81

1. Mean (±SD) for 48 chickens.

2. Calculated from the regression equation of gross energy output and gross energy intake for a food intake of 100g/bird.

Metabolisability, AME and AME_N of the test diet were higher ($P < 0.05$) for the adult cockerels than for the broiler chickens. This study has shown that AME determined with adult poultry may seriously overestimate the energy available to young broiler chickens for some diets. Furthermore the present study provides evidence that the rapid broiler assay may give accurate ME values for broiler chickens.

FARRELL, D.J. (1978). *Br. Poult. Sci.* 19: 303.

JOHNSON, R.J. and EASON, P.J. (1986). *Proc. Poultry Husbandry Research Foundation*, p. 114. University of Sydney.

SIBBALD, I. (1982). *Can. J. Anim. Sci.* 62: 983.

Victorian Department of Agriculture and Rural Affairs, Animal Research Institute, Intensive Livestock Unit, Werribee, Victoria 3030