HYPERPLASTIC POST-WEANING GROWTH IN SHEEP

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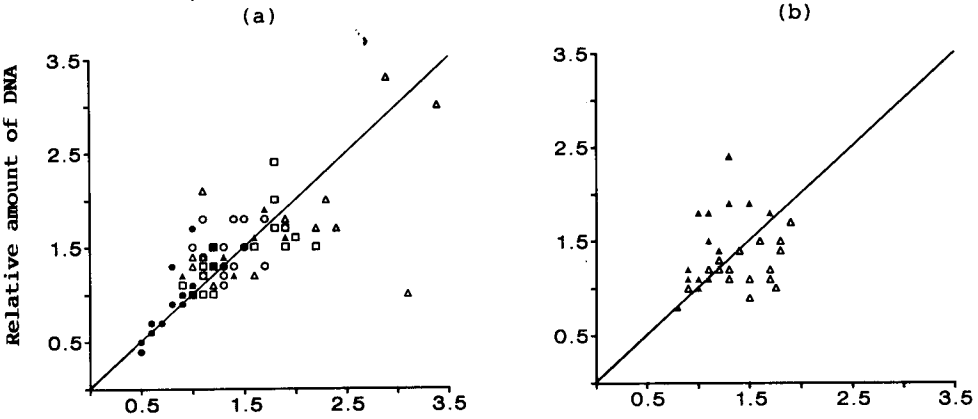
Differences in number rather than size of cells account for differences in weights of tissues between genotypes, including breeds of sheep (Colebrook et al. 1988). Growth seems to have the same character (Goss 1976; Di Marco et al. 1987; Tulloh et al. 1986) and the data here provide evidence of this for digestive organs, liver and muscles of weaned sheep.

Sixteen Border Leicester x Merino wethers were fed ad libitum from weaning (17 kg) on a pelleted diet with 15% protein and 12 MJ metabolizable energy per kg. Groups of four were killed at 20, 25, 40 and 45 kg to obtain the fresh weights (free of superficial fat) of various tissues. Samples were frozen in liquid nitrogen for determination of DNA (based on Kissane and Robins 1958).

The Figure shows:

(a) In the abomasum, liver, m. triceps brachii (caput longum) and m. biceps brachii, the total amount of DNA increased during growth to the same degree as tissue weight and, in the small intestine, both DNA and weight decreased progressively; data for m. tensor fasciae latae (not shown) were variable.

(b) Rumen DNA increased proportionately less than rumen weight and the opposite held for the large intestine. It follows that cell size did not change in some tissues, increased in the rumen and decreased in the large intestine.



DNA and weight for various tissues in 16 sheep growing from 20 to 45 kg. Data relative to those for the lightest sheep at 20 kg. The line of equality is shown. (a) abomasum (o), small intestine (●), liver (▲), m. triceps (Δ), m. biceps (□); (b) rumen (Δ) and large intestine (▲).

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