

ABSORPTION AND EXCRETION OF LACTIC ACID ISOMERS IN PIGS

M.J. SISSONS*, P.D. CRANWELL* and A.W. BELL*

Very high concentrations of D(-) and L(+) lactate (D and L) are regularly found in the stomach of sucking pigs reared under conventional conditions (Cranwell *et al.* 1976). In an experiment to determine the absorption and excretion of the two isomers, blood and urinary lactate concentrations were assayed following regular intragastric injection of milk plus lactate.

Three Large White, sow-reared pigs aged 4 to 9 weeks were prepared with chronic jugular catheters and gastric fistulae. Each animal received at random each of the following treatments at 5 to 10 d intervals: hourly intragastric injections of 15 ml/kg ^{0.75}/h of either cow's milk (control), or 250 mM racemic lactic acid in cow's milk for 19 h. Blood was sampled at intervals and all urine collected for 28 h from the commencement of the experiment. Plasma and urine were assayed for L (Lundholm *et al.* 1963) and D (Brandt *et al.* 1980).

Mean (\pm SEM) plasma D and L concentrations during control injections were D, 0.173 \pm 0.007 mM and L, 1.416 \pm 0.063 mM. Plasma D increased and reached a plateau (4.6 fold above baseline) 250 min after the first injection and decreased to baseline levels 225 min after the last injection (Fig. 1). Plasma L showed no definite pattern but was nearly always above control levels. Urinary excretion of total lactate, L and D as a percent of the total amount given were 4-7%, 2-3% and 7-14% respectively.

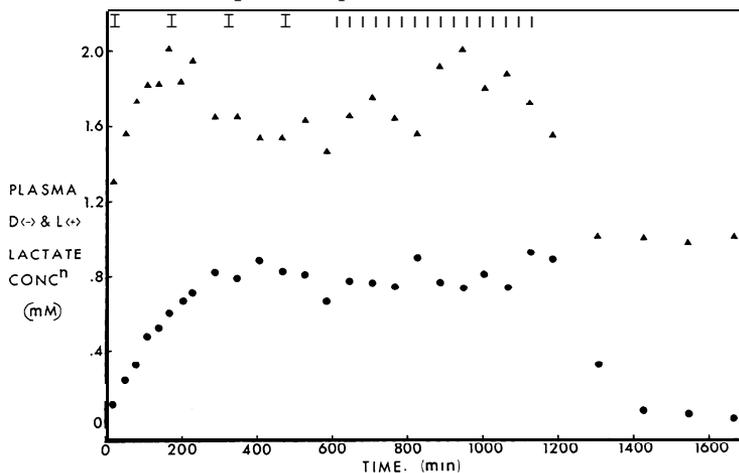


Fig. 1 Mean plasma D (●) and L (▲) concentrations following intragastric injections of racemic lactic acid in cow's milk. I - denotes time of intragastric injections

In conclusion, the observations that D reaches a stable and elevated concentration following repeated intragastric injection of lactate and only a small proportion is excreted in the urine suggest that D is rapidly metabolized and/or its absorption is limited.

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* School of Agriculture, La Trobe University, Bundoora, Vic. 3083.