

WEANER PIG PERFORMANCE ON DIETS CONTAINING CASEIN, FREE AMINO ACIDS OR CONVENTIONAL PROTEINS

D.I. OFFICER*, E.S. BATTERHAM* AND D.J. FARRELL**

As part of a project to determine the utilisation of amino acids by weaner pigs a number of experimental diets are being examined. These include a **casein** based-diet and a **chemical** diet containing free amino acids that was developed by Chung and Baker (1991). The amino acid **digestibility** of both of these diets is high, which is a pre-requisite for these studies. **Preliminary** results with the **casein** diet were, however, disappointing. This might be improved with the inclusion of **NaHCO₃** (Baker, personal communication). **The** objectives of the research were to determine the **optimal** level of inclusion of **NaHCO₃** to the **casein** diet and to compare piglet responses when given both experimental diets with that achieved with two control diets.

Six diets were used - a commercial super creep (Super creep) which contained cooked **cereals**, the free amino acid diet (FAA) with starch/sucrose/lactose as the energy sources (**Chung and Baker 1991**), a **casein/fish/soya** diet with sucrose as the energy source (Sucrose), the **casein** diet (**Casein**), and the **casein** diet supplemented with 10 or 20 g/kg **NaHCO₃**. All diets were formulated to have an available lysine/DE ratio between **0.8-0.84** g/MJ and offered ad libitum. Piglet performance was assessed from weaning at 3 weeks of age **until** 20 kg (Table 1).

Table 1 Weaner piglet performance over the 5-20 kg growth phase

Growth parameter	Diets						SEM
	Super creep	Sucrose	FAA	Casein	Casein +10	Casein +20	
Gain (g/d)	490a	520a	350b	365b	420b	390b	16.3
Feed intake (g/d)	630ab	660a	630ab	560b	620ab	590b	17.1
FCR	1.3a	1.3a	1.8c	1.6b	1.5b	1.5b	0.06

Means with different subscripts are significantly different ($P > 0.05$).

Piglets given the FAA and **Casein** diets grew more slowly and had higher **FCRs** than those given the super creep or sucrose-based diets. The addition of 10 g/kg **NaHCO₃** to the **casein** diet tended to improve performance, but these differences were not statistically significant ($P > 0.05$).

These results show that neither the **casein** nor the FAA diets were capable of producing growth rates comparable with the commercial super creep or sucrose-based multiple protein diets. Whilst the addition of 10 g/kg **NaHCO₃** to the **casein** diet tended to improve performance, growth was **still** reduced by other as yet undetermined factor/s. The lower performance of the piglets given the FAA diet may have been due to the method of feeding. Chung and Baker (1991) stored their mixed diet in a deep freezer and offered the feed for 1 h, twice daily. In contrast, we stored the diet at room temperature and offered the diets ad libitum. It is possible chemical reactions within the FAA diet under our experimental conditions may have contributed to the **lower** piglet performance. This aspect is being investigated.

CHUNG, T.K. AND BAKER, D.H. (1991) *Journal of Nutrition* **121:979-984**.

* Wollongbar Agricultural Institute, Wollongbar, NSW 2477

** Dept. Biochemistry, Microbiology and Nutrition, University of New England, Armidale 2351