

**THESIS TITLE : UTILIZATION OF CARBOHYDRATE IN WEANING  
PIGS**

**AUTHOR : MR. SUNPHET KHONGNGAM**

**THESIS ADVISORY COMMITTEE :**

*Suwit Terapuntuwat* .....Chairman  
(Dr.Suwit Terapuntuwat)

*Narong Kitpanit* .....Member  
(Associate Professor Dr.Narong Kitpanit)

*Parwadee Pakdee* .....Member  
(Assistant Professor Dr.Parwadee Pakdee)

## **ABSTRACT**

Two experiments were carried out to evaluate the nutritive value of carbohydrates in weaning pigs. In experiment 1, 12 male piglets 35 to 49 days of age were divided into 6 groups, each of which was assigned to one of 6 experimental diets based on various carbohydrate sources such as dextrin, steamed broken rice, steamed glutinous rice, broken rice, glutinous rice at 40 to 53 percent of the diets. The respective diets were calculated to have amylose and amylopectin in the ratios of 0.70:0.00, 11.12:29.33, 3.33:31.99, 3.30:30.00, 11.38:30.00 and 4.17:40.00, respectively. All of the experimental animals were fed daily an experimental diet at the level of 4 to 5 percent of body weight. Nutrient digestibilities and blood glucose levels were observed. Dextrin incorporated diet showed significant lower digestible dry matter, ash, nitrogen-free-extract and energy utilization value ( $P<0.05$ ) and highly significant lower digestible nitrogen ( $P<0.01$ ) than piglets fed other carbohydrate diets. The fat digestibility value of a steamed broken rice diet (77.04%) was lower than the value of a broken rice diet (84.30%). The piglet a fed glutinous rice plus dextrin diet, a broken rice diet

and a glutinous rice diet were similar in nutrients digestibility ( $P>0.05$ ). The effect of carbohydrates on blood glucose level at 90 minutes after feeding for a dextrin diet, steamed broken rice diet and steamed glutinous rice diet (7.42, 6.07 and 6.94 fold of glucose level before fed diet, respectively) were higher than the blood glucose values of a broken rice diet and a sticky rice<sup>a</sup> diet (4.51 and 4.33 fold of blood glucose level before fed diet, respectively). Piglets fed a broken rice diet alway showed increasing value of blood glucose indexes. These indexes were greater than a glutinous rice value in all observed values (at 30, 60, 90, 120 and 150 minutes after fed diet). Average daily gain and feed conversion ratio among the treatment were similar (199.41 g/h/d and 1.39, respectively) ( $P>0.05$ ). In experiment 2, a piglets performance experiment, 72 weaning pigs were assigned in a Randomized Complete Block Design into 3 blocks of 24 piglets. The six experimental treatments consisted of 4 piglets per pen (2 males and 2 females). The experimental diets were similarly formulated as the previous trial. At 40 to 54 days of age, average daily gain of the piglets fed glutinous rice plus dextrin, broken rice diet and glutinous rice diet (363.57, 367.14 and 400.24 g/h/d) had a higher significant value ( $P<0.01$ ) than dextrin diet, steamed broken rice diet and steamed glutinous rice diet (285.00, 262.38 and 268.33 g/h/d). Average daily feed intake value in the overall experiment were similar ( $P>0.05$ ), but at 40 to 54 days of age, the piglets fed steamed broken rice diet consumed the experimental diet (510.32 g/h/d) lower than the piglets fed broken rice diet and glutinous rice diet (615.78 and 627.98 g/h/d) ( $P<0.05$ ). The average daily feed intake for piglets fed steamed glutinous rice diet, glutinous rice plus dextrin diet and dextrin diet was 523.22, 565.08 and 574.36 respectively. Feed conversion ratio in the overall experimental treatments (26-54 day) ranged from 1.76 to 2.05. These experimental results showed that the utilization of carbohydrate sources processed by steam heat were improved by increasing blood glucose value more than non-processed carbohydrate. The improvement in digestibility of nutrients and performances of weaning pigs were not found. The processed high amylose starch had decreased fat digestibility. The increment of amylose and amylopectin levels in the experimental diet caused decreased values in blood glucose level but did not effect the nutrients digestibility and piglets performance.