Final Report

on

Effect of growth promoters on growth performance and survival of pre-weaning kids

By

Usa Chethanond, Apichart Lauhpetch, Sudarat Suwannarat, Chaiyawan Watanachant, Nannapat Pruphetkaew, Walailuk Jitpiboon and Arpasara Woraraj

8th August 2012

Effect of growth promoters on growth performance and survival of pre-weaning kids

Abstract

Goat is known to be a slow growing animal among ruminants. In particular, the most common problem of goat production is its high pre-weaning mortality. Thus, feed additives were introduced in these trials to test their effects on growth efficiency and mortality reduction. Two experiments in the (Complete Randomized Design: CRD) were conducted. In Experiment 1, the objectives were 1) to study growth performance in pre-weaning kids and 2) to study preweaning mortality. Twenty-four cross-bred dams (50% Anglo-Nubian and 50% native) of age 2-9 y were used and allocated into 4 treatments. At the start of the investigation, all the dams were 4 months pregnant. There were T1:control (n=5), T2: control + metal amino acid chelating agent (MAAC) (n=5), T3: control + Mannan oligosaccharides (MOS) (n=5) and T4: acidic fermented milk replacer (AFMR) (n=6). The animals were fed for 1 month before parturition. One male kid from twin born in each dam was selected and allocated into the same treatments. There were 8, 6, 6 and 8 kids in T1, T2, T3 and T4, respectively. These kids were fed with liquid feed until 12 weeks old (weaning age) following which roughage and concentrates were gradually introduced until 17 weeks old. Their packed cell volume during 1-17 week period was monitored and ranged 25-37%. Average weight of new born kids in T1-4 ranged 2.15-2.35 kg ($p>0.05$), weaning weight at 12 weeks in T1-3 ranged 9.01-9.68 kg while T4 was 7.39 kg ($p<0.05$) and at 17 weeks T1-4 weighed 10.57-12.43 kg ($p>0.05$). Random intercept mixed effect model showed that growth rate in T1-T3 throughout the study was 0.585-0.600 kg/w while that of the AFMR was 0.483 kg/week which differed statistically ($p<0.05$). Feed Conversion Rates: FCR (Dry Matter feed) of T1-4 during 12th-17th week were 4.22-7.46 but did not have difference statistically ($p>0.05$). Fast live weight, carcass weight and dressing percentage were not much different in each treatment. Pre-weaning mortalities were 27.3% and 14.3% in T4 and T2, respectively and 0% in T1 and T3. In Experiment 2, the objectives were to measure protein and IgG concentrations in dam serum and colostrum as well as those in new born kids. Thirty-two 4-month-pregnant dams in the same herd were allocated into 3 treatments, T1: control (n=11), T2: control + (MAAC) (n=10), T3: control + MOS (n=11). They were fed to dams for 1 month before parturition and given as liquid feed to kids for 7 days. Dam blood was collected each week

until parturition and colostrum was also collected to determine protein and IgG levels. These dams gave birth to both single and twin kids with insignificant birth weights ($p>0.05$). Kid blood was collected on parturition day and also at days 1, 2 and 7 postpartum. Dam serum protein in T1-4 peaked at 2nd week before parturition (67.99-70.62 mg/ml) and decreased below normal on parturition day (51.21-52.69 mg/ml) while dam serum IgG in T1-4 remained quite stable (10.93-15.74 mg/ml) and declined on the parturition day (7.64-10.85 mg/ml) ($p>0.05$). Colostral protein increased 2 times (117.82-133.04 mg/ml) than those of the serum protein (59.50-62.34 mg/ml) while colostral IgG (14.32-16.65 mg/ml) tended to be higher than serum IgG before parturition (10.93-15.74 mg/ml) ($p>0.05$). This indicated that passive immunity was barely transferred. Kid serum protein in T1-4 on parturition day were 50-53 mg/ml and peaked in 1 day postpartum (68.62-75.71 mg/ml) then declined on 7 day postpartum (62.08-65.79 mg/ml) while kid IgG in T1-4 on parturition day were 6.14-9.19 mg/ml before peaked at 1 day postpartum (13.34-15.75 mg/ml) and declined to 8.71-10.50 mg/ml on 7 days postpartum ($p>0.05$). We concluded that MOS and MAAC did not prove remarkable effects on enhancing immunity in dams nor increasing feed efficiency. However, MOS may have some effect against intestinal infection. AFMR could not prevent *E.coli* infection and caused slow growth as well as high mortality rate in pre-weaning kids. Proper sanitation and hygienic practices must be emphasized to reduce infection and pre-weaning mortality rate.