Evaluation of xanthosine treatment on gene expression of mammary glands in early lactating goat

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Short title: **Effects of xanthosine in lactating goats**

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Summary

This study aimed to examine the effects of xanthosine (XS) treatment on gene expression of goat mammary gland and examine the changes in milk production. Seven primiparous Beetle goats were assigned to the study. Five d after kidding, one gland (either left or right) was infused with XS (TRT) twice daily (2×) for 3 d and the other gland with no XS infusion served as a control (CON). Mammary biopsies were collected at 10 d and RNA was isolated. Gene expression analysis of milk synthesis genes, mammary stem/progenitor cell makers, cell proliferation and differentiation markers were performed using real time quantitative PCR (RT-qPCR). Results showed that the transcripts of milk synthesis genes (*BLG4*, *CSN2*, *LALBA*, *FABP3*, *CD36*), mammary stem/progenitor cell markers (*ALDH1* and *NR5A2*) was increased in as a result of XS treatment. Average milk yield in TRT glands was increased ~2% (P=0.05, paired t-test) per gland relative to CON gland until 7 wk. After 7 wk, milk yield of TRT and CON glands did not differ. Analysis of milk composition revealed that protein, lactose, fat and solids-not-fat percentages remained the same in TRT and CON glands. These results suggest that XS increases