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Effect of Ensiled Pineapple Waste with Rice Straw as Roughage Source in Total Mixed Ration on Rumen Fermentation Products

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Abstract

Four ruminal fistulated crossbreed (Holstein-Friesian × Native) heifer with average body weight 458±19 kg were used to determine rumen fermentation products (pH, volatile fatty acids and ammonia nitrogen) at 0, 2, 4 and 8 h after feeding based on Latin square design. The animals were randomly fed with one of the four total mixed ration containing different roughage sources. Treatments consisted of (1) ruzi silage, (2) ensiled pineapple waste, (3) ensiled pineapple waste with 10% rice straw and (4) ensiled pineapple waste with 15% rice straw. Each The ratio of roughage and concentrate in the ration was 50:50.

Physical characteristic of rice straw was softer after ensiling process. It had lactic acid odor with light yellow colour. However, supplementation of rice straw increased dry matter content of the silage but decreased in crude protein content. Rumen pH, total VFA and NH₃-N were not significant difference among the treatments. The highest amount of total VFA were found during 2–4 hour after feeding. But NH₃-N concentration was the highest in 2 hour after feeding. The highest amount of VFA found in rumen fluid was acetic acid(206.75, 176.60, 198.63 and 198.50 mM/L), follow by propionic acid and butyric acid. However, animal fed with ensiled pineapple waste groups tended to had lower ruminal pH but higher in NH₃-N (12.86, 25.05, 20.75 and 24.21 mg%) when compare to ruzi silage group. Moreover, the ratio of acetic : propionic: butyric (C2:C3:C4) were not significant different among the groups(54:24:22, 55:22:23, 52:25:23, 53:24:23). For recommendation, ensiled pineapple waste with 10–15% rice straw could be used as roughage source for ruminant.

Keywords: Ensiled pineapple waste with rice straw, pH, roughage source, total mixed ration, volatile fatty acids and ammonia nitrogen