

## FEEDING EXPERIMENT OF JAPANESE SHORTHORN STEERS WITH PELLETTED LIGNEOUS MATERIALS

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### Introduction

There is a shortage of roughage for ruminant livestock due to insufficient production and supply in Japan, and the shortage is covered by imports. Under this circumstance, we performed this experiment with an aim to utilize unused ligneous materials as roughage effectively (FJ-Sabhan et al., 1970; Mori et al., 1983; Nasir, 1984; Singh et al., 1981).

### Materials and Methods

The ligneous material used as roughage in the experiment was Japanese cedar lumber from thinning, and rice straw was used as control feed. Japanese cedar lumber was processed under the condition of high temperature and high pressure, mixed with formula feed, and pelleted. The mixing ratio of roughage and formula feed was 15 to 85. The chemical composition of the feed for the experiment is shown in table 1.

For the experiment, 10 Japanese Shorthorn steers weighing 485 kg on the average were divided into 2 groups, e.g. test plot and control plot. During the 16-week experiment, the body weight of the animals was measured every 2 weeks. After the experiment, the animals were slaughtered and dissected to examine the internal organs pathologically and to study the properties of rumen con-

tent, blood component, and dressed carcass

### Results and Discussion

The animals of both the test and control groups showed a good appetite for the test feed. The animals' body weight at the end of the experiment and their daily gain were 654.3 ± 27.8 kg and 1.45 ± 0.08 kg, respectively, for the test group; and 640.9 ± 24.2 kg and 1.36 ± 0.15 kg, respectively, for the control group. Both groups had very good body weight gain. The test group was slightly better than the control group in body weight and daily gain, although a significant difference was not observed. Autopsy results showed that abnormality was not found in internal organs, which may result from the feeding of processed Japanese cedar feed, nor was there a marked difference in rumen content and blood component seen between the two groups. As presented in table 2, there were no marked differences in the dressing percentage and meat quality between the two groups.

TABLE 2. CARCASS QUALITY OF EXPERIMENTAL STEERS

	Test plot	Control plot
Carcass weight (kg)	375.6 ± 19.7	366.8 ± 20.6
Dressing percentage	60.7 ± 0.9	59.7 ± 1.1
Rib eye area (cm <sup>2</sup> )	42.6 ± 4.0	43.3 ± 4.9
Marbling score	0.9 ± 0.5	0.7 ± 0.6

TABLE 1. CHEMICAL COMPOSITION OF EXPERIMENTAL FEEDS (DM %)

	Crude protein	Crude fat	NFE	Crude fiber	Crude ash
Formula feed	15.3	3.6	70.4	4.4	6.3
Japanese cedar	1.1	0.6	29.0	68.0	1.3
Rice straw	3.9	1.5	41.1	35.6	17.9

From these results, we conclude that the processed Japanese cedar lumber from thinning which was used for the experiment has a possibility of being utilized as roughage to substitute for rice straw for the fattening cattle. Problems that have

to be examined further in the future for the practical use of ligneous materials as feed include the economical efficiency and effects of long-term feeding on ruminants.

(Key Words: Ligneous Material, Biomass Conversion, Fattening Cattle)

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