

Chapter VI

CONCLUSION AND RECOMMENDATION

This study was undertaken to utilize brewery yeast as another protein source in feed meal of broiler. The present work is original as no published data has been found. The study of brewery yeast as an ingredient in feed meal was divided into 3 parts: a) the preparation of dry brewery yeast, b) the analysis of brewery yeast and feed meals, and c) feeding trials of broilers with feed meals containing brewery yeast.

In the preparation of brewery yeast to be used in the broiler's diet, about 1 Kg. of dry yeast product obtained from 10 litres of waste yeast solution. There was quite a **loss** of yeast during preparation step especially in filter press. The dry brewery yeast received was brown in color, mild in odor, and rather bitter in taste.

In the analysis of brewery yeast, it was found to contain high protein content but low in fat and calcium. Hence, the yeast could substitute fish meal and soybean meal primarily for protein. In the analysis of feed meal, the chemical composition of the meal containing yeast replaced 12.5 and 25% fish meal, and 24% soybean meal was compared well with the control ration in terms of crude protein, ash and fiber. However, the amount of fat, calcium and phosphorus were lower than that in the control meal. The brewery yeast contained high lysine but low methionine. With respect to the concentration of both lysine and methionine which are important to rapid growth of broilers, feed meal containing yeast replaced fish meal at 25% appeared to be comparable to the control meal.

In the feeding trials, the number of dead broilers showed more during the first five weeks of both the feeding trials with feed meal containing brewery yeast replaced fish meal and soybean meal. There

appeared that growth rate of broilers fed with meal containing yeast was fairly similar to that of commercial formulation. The growth rate of all broilers was lower during the initial feeding period than during the final feeding period. The final body weight of broiler fed with meal containing 12.5 and 25% yeast replaced fish meal were similar to that of broilers fed with commercial formulation feed meal. This was about 1.7 kg. per bird. Those broilers fed with feed meal containing 24% yeast replaced soybean meal, the final body weight was slightly higher than that of broilers fed with commercial ration. This was about 1.6 kg. per bird. Total feed consumption and overall protein efficiency of feed meal containing brewery yeast replaced fish meal and soybean meal were agreed well with the commercial formulation feed meal. For broiler fed with feed meal containing yeast replaced fish meal, total feed consumption and overall protein efficiency after 56 days were 4.1 kg. per bird and 2.3 respectively. For broiler fed with feed meal containing yeast replaced soybean meal, total feed consumption and overall protein efficiency after 56 days were 3.7 kg. per bird and 2.2 respectively. Therefore it appeared that yeast could be used as an ingredient in broiler feed meal at various percentages, i.e. replacing fish meal at 12.5 and 25%, and replacing soybean meal at 24%.

On the basis that yeast is a by-product of beer production, the cost of yeast is practically zero. However, expenses on the processing steps for brewery yeast to be used in feed meal is existed and should not be higher than the difference between the cost of control meal and the one containing yeast in the diet. This is very important for yeast to be competitive in price compared with fish meal and soybean meal. Based on this approach, the overall expenses of the

12.5 and 25% yeast groups for both initial and final feeding periods should not be more than 8.36 and 16.68 Baht per 100 Kg. feed. Similarly, the highest expenses of the 24% yeast group for both periods should not be higher than 27.99 Baht per 100 Kg. feed.

Future work should be emphasized on using higher percentages of brewery yeast to replace fish meal and/or soybean meal in commercial feed meal. In this approach, fat and calcium must be added to meet requirement of broiler. More methionine is necessary when yeast is used to replace fish meal. It is possible to utilize the brewery yeast in another non-ruminant animals' feed meal like pigs. More brewery yeast will be required in large scale experiments, so appropriate equipments are needed. Drying of brewery yeast should be done in drum dryer. This method will increase efficiency of drying as well as product quality. Vitamin B content in brewery yeast should be studied in order to minimise the vitamin B in the enrichment used in commercial feed meal. Another single-cell protein source like bacteria may be interesting in using as another protein source in feed meal.