

## Effect of different diets of full fat soybean (flake) on the organoleptic quality of broiler meat

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### ABSTRACT

A study was carried out on organoleptic quality of broiler meat when fish meal (FM) was replaced by different levels of full fat soybean (FFSB) in the ration. In terms of colour and appearance the score was 6.63, 6.85, 7.20 and 7.27 in T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>. The colour and appearance of meat scored highest in 15 per cent FFSB. It was observed that with increasing level of inclusion of FFSB increased the score for colour and appearance. Tenderness of meat was not affected significantly by different treatment diets. The average score for juiciness of meat was higher in 15 per cent FFSB (7.36) and lowest in FM diet (6.55) differed significantly (P < 0.05). The higher score for juiciness in 15 and 10 per cent FFSB diets was due to the higher fat content of meat. The average score for meat flavour was highest in 15 per cent FFSB (7.31) and lowest in FM diet (6.60). The flavour of meat with FFSB diet was significantly superior (P < 0.05) than fish meal diet. The average score for acceptability of meat was maximum in 10 per cent FFSB (7.60) and minimum in FM diet (6.60). The acceptability of meat was significantly higher (P < 0.01) in FFSB diets as compared to FM diet.

**Keywords:** FFSB, FM, tenderness, juiciness, flavor, acceptability

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### INTRODUCTION

Quality of meat depends on its colour, appearance, tenderness, juiciness and flavour. In the present feeding trials fish meal (FM) is replaced by the different levels of full fat soybean (FFSB). While replacing the fish meal by different levels of FFSB how it reflected on the different aspects of meat quality has been studied in this investigation.

### MATERIALS AND METHODS

In this investigation three experimental trials were conducted i.e. in the month of September-October, November-December (2000) and March-April, 2001. During these trials different diets were given to the birds, viz., T<sub>0</sub> (Control) received 5 per cent fish meal, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> received the diet containing 5, 10 and 15 per cent full fat soybean flake (FFSB), respectively. For studying organoleptic quality 5 birds from each treatment were slaughtered at the age of 6 weeks. The 9 point Hedonic scale suggested by Peryam and Pilgrim (1957) was used for organoleptic evaluation of meat samples of broiler. A panel of ten trained and semi-trained persons was formed for the evaluation of meat quality. Due precautions were taken to avoid biasness in judging for particular treatment group by not allowing them to know the code numbers

allotted to the treatments. The judges were washing their mouth in between the use of two different samples. The time was kept constant throughout the investigation. Organoleptic tests included the parameters like colour and appearance, tenderness, juiciness, flavour and general acceptance. For these organoleptic tests plain meat of four different treatment groups was cooked in separate four pressure cookers for 10 minutes with 1 per cent common salt. The judges tested the cooked meat and allotted marks to each point on the basis of 9 points score. Accordingly observations were taken and statistically analysed.

### RESULTS AND DISCUSSIONS

The organoleptic tests like colour and appearance, tenderness, juiciness and acceptability (Table 1) indicated following results

#### *Tenderness of Meat*

The average score for tenderness of meat was highest in T<sub>1</sub> (7.45), followed by T<sub>2</sub> (7.30), T<sub>3</sub> (7.23) and T<sub>0</sub> (6.90). These values indicated more or less similar score for all the treatments under study. The statistical analysis also indicated that the tenderness of meat was not affected significantly by the different treatment diets. According to Singh and Panda

**Table 2.** Analysis of variance for organoleptic quality of meat of birds fed with different treatment diets.

S.V.	D.F.	MSS				
		Colour and appearance	Tenderness	Juiciness	Flavour	Acceptability
Replication	9	0.145	0.491	0.808	0.341	0.511
Treatment	3	1.482*	0.539 <sup>N.S.</sup>	1.559*	1.130*	1.892**
Error	27	0.375	0.542	0.432	0.355	0.100

N.S. : Not significant, \* : Significant at < 0.05, \*\* : Significant at < 0.01

(1992) the effect of diet on tenderness of meat was not direct but was mediated through the age at which the bird could be marketed. They further observed that the birds of same age showed similar tenderness of meat and shear values regardless of the composition of the diet fed. In general, the tenderness of meat is a function of the age and class of chickens. Broilers normally did not differ in their tenderness of meat.

#### *Juiciness of meat*

The average score for juiciness was maximum in T<sub>3</sub> (7.36) followed by T<sub>2</sub> (7.34), T<sub>1</sub> (6.85) and minimum in T<sub>0</sub> (6.55). The juiciness of meat from the birds provided with 15 and 10 per cent FFSB diet was significantly ( $P < 0.05$ ) higher than 5 per cent FFSB and 5 per cent fish meal diet. The 5 per cent FFSB and 5 per cent fish meal diets also differed significantly from each other. Significantly higher juiciness in 15 and 10 per cent FFSB diet may probably be due to the higher fat content. The earlier findings indicated that the fat deposited into intra-muscular and subcutaneous areas improved the juiciness and appearance of meat in poultry birds (Singh and Panda, 1992) holds good in this study.

#### *Flavour of the meat*

The average score for meat flavour was highest in T<sub>3</sub> (7.31) followed by T<sub>2</sub> and T<sub>1</sub> (7.25) and lowest in T<sub>0</sub> (6.60). The results indicated that in all the FFSB diets flavour of meat was significantly superior than fish meal diet meat. In all the FFSB diet meat a typical

soya flavour was noticed which was highly accepted in organoleptic taste. Generally the meat emit fish flavour when fed with fishmeal or fish oil in the poultry ration (Singh and Panda, 1992). In the present study the diets T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> were without fish meal and did not emit the fishy flavour. That may be the reason for higher acceptability of the flavour of meat under FFSB diets.

#### *Acceptability of meat*

The average score for acceptability of meat was maximum in T<sub>2</sub> (7.60) followed by T<sub>1</sub> (7.40), T<sub>3</sub> (7.30) and T<sub>0</sub> (6.60). Statistical analysis indicated that the acceptability of meat was significantly higher in all FFSB diets as compared to fish meal diet. However, within treatments there was no significant difference observed for the different levels of FFSB diets. Thus considering the colour and appearance, tenderness, juiciness and flavour the full fat soybean meat was very well acceptable.

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