COMPARATIVE ANALYSIS OF QUAIL AND CHICKEN MEAT AND EGG

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Abstract: The study was based on both primary data and secondary data. This study focused on comparison of chicken and quail egg and meat production. Study identified that comparatively, quail egg and meat are having better nutrient content and rearing of quail bird is easy because of the disease resistance nature of the bird. Quail eggs strengthen the immune system, promote memory health, increase brain activity and stabilize the nervous system. The quail meat is low in cholesterol and high in iron and protein compared to chicken. The net income obtained in quail farming was lower (Rs. 0.61 per bird) than that of chicken farm (Rs. 8.58 per bird). The producer was realizing 64 per cent of consumer rupee in quail farm because of the less number of intermediaries in marketing of quail. Though the producer share in consumer rupee was low in quail egg production (65 per cent), the quail egg is available at cheaper rate comparatively to the consumer and net income was almost same in both farms. The major problems in quail farming as reported by the farmer were high price of feed and inadequate institutional credit for the development of commercial quail farms. Quail farming could be more profitable business if the problem related to it can be minimized.

Index Term: Chicken, Quail, Nutritive Value, Economic Difference

INTRODUCTION

Proteins are essential nutrients for the human body, one of the building blocks of body tissue. It has three categories of amino acid viz., essential, non-essential and conditional amino acid. Essential amino acids cannot be synthesized in the body and has to be supplied by food. Protein deficiency reduces ability to synthesize some or all protein rich content of blood eg. WBC that includesneutrophils, eosinophil's, basophils, monocytes, B cells and T cells. Neutrophils engulf invading bacteria, while eosinophil'sattack viruses and parasites, thus protein-containing leukocytes may be compromised, limiting ability to fight infection and recovery from injury. T cells secrete

protein molecules called cytokines and chemokine's which are critical in both stimulating immune cells, directing their activities and turning off immune and inflammatory reactions as necessary to avoid harming healthy cells. The vital regulatory role these proteins play may not be possible in absence of sufficient dietary protein. Inadequate protein consumption leads to diminished immune system response and frequent infections. Hence, ability to recover from infections is also compromised when diet lacks sufficient protein. Protein deficiency results in chemical balance in body resulting in leakage of fluid into tissues. Hair is composed of a specialized protein keratin. Protein malnutrition disrupts hair growth. With a mild to moderate protein deficiency hair becomes brittle and breaks easily and there is thinning of hair.

Protein Energy Malnutrition (PEM) has been identified as a major health and nutrition problem in India. PEM is commonly seen in fewer than five year old children (peak 6 months to 3 years). PEM is primarily due to inadequate intake of food (food gap). Indian diets derive almost 60 per cent of their from cereals with relating low digestibility and quality. There have been several surveys of diets and protein in takes in India by the National Nutrition Monitoring Board (NNMB) over the last 25 years, in urban and rural as well as in slum dwellers and tribal populations. Data of disadvantaged populations from slums, tribal and sedentary rural Indian populations show that the protein intake (mainly from cereals) is about 1 gm /kg/day. However the protein intake looks less promising in term of the protein digestibility corrected amino acid score (PDCAAS), using lysine as the first limiting amino acid, where all populations, particularly rural and tribal, appear to have an inadequate quality to their protein intake. The protein: energy (PE) ratiois a measure of dietary quality, and has been used in the 2007 WHO/FAO/UNU report to define reference requirement values with which the adequacy of diets can be evaluated in terms of a protein quality corrected PE ratio is a measure of dietary quality, and corrected PE ratio. It is likely that about one third of this sedentary rural population is at risk of not meeting their requirements. These levels of risk of deficiency are in a population with relatively low BMI population, whose diets are also inadequate in fruits and vegetables. Therefore, while the burden of enhancing the quality of protein intake in rural India exists, the quality of the diet, in general, represents a challenge that must be met.

Net Protein Utilization (NPU) is an index of protein quality, calculated by multiplying protein digestibility by biological value. NPU of grains is generally less than 40. Rice is the exception, with NPU of about 60, but it is low in protein (7.5 percent). NPU of chicken eggs is 87.

Generally, cereals lack the most important amino acids for humans – lysine, threonine, the sulphur-bearing amino acids (methionine and cysteine) and occasionally tryptophan. Eggs and poultry meat are rich in these essential amino acids. Poultry meat and egg are the best source of qualityprotein and are badly needed by the many millions of people.

In the poultry sector, chick and quail farming are popularized in India. They are the good source of protein and generate employment to rural people. Hence, an attempt has been made to compare the nutritive value of meat and egg of quail and chick, economics of chick and quail farming and to identify the source of quality protein.

RESEARCH METHODOLOGY:

The study was based on both primary data and secondary data. The information related to costs and returns of meat and egg were collected from entrepreneurs who are maintaining quail and chick farms. The nutritive value of egg and meat were collected from secondary source separately for quail and chicken. The collected information was analysed using simple percentage analysis.

RESULTS AND DISCUSSION

The present study briefly discussed the comparative analysis of chicken and quail production. The results are given in four sections viz, comparison of chicken and quail farms, nutritive value of egg and meat, economic difference and price spread.

i. Comparison of chicken and quail farms

The general details regarding chicken and quail farm were collected fromentrepreneursand it is given in Table 1

Table 1

Comparative Analysis of Chicken and Quail farming

S.No	Particulars	Chicken	Quail
1	Purpose of rearing	Both meat & egg	Both meat & egg
2	Egg laying starts at	20th week	6th week
3	Egg size	50 gm	10 gm
4	Egg colour	White colour	multicolour
5	Weight of bird during sales	2.19 kg	200-250gms
6	Sale of bird for meat after	42-44 days	28 days
7	Total space requirement per bird	2.5 sq.ft	1.sq.st

Source: Primary data

It could be seen from the table that the quail and chicken were rearedfor both purpose of meat and egg. Quails are small game birds that are used for eggs and meat (DAFF, 2013).After 20th week the chicks are laying eggs but quails started after sixth week itself. The size of egg and weight of meat also small compared to chicken. The chicken egg colour is only white but the quail is having multicolour egg. Quail eggs are characterized by a variety of colour patterns; they range from snow white to completely brown. More commonly, they are tan and dark brown, speckled or mottled brown with a chalky blue covering (Randall Bolla 2008). Chicken is sold in weight basis but the quails are sold in piece basis. Weight of quail bird ranges from 200 -250gms. Sales of the chicken bird was after the 45 days but the quail bird was sent to the market within a month i.e.,sale after 28 days.

ii. Nutritive value of egg

Eggs of poultry can be considered as the most preferred poultry products in our state. High nutritive value, better digestibility, low cost and easy availability are some of the reasons for this preference. Comparison of nutritive value of chicken and quail eggs are identified and it is given in Table2.

Table 2

Nutritive Value of Chicken and Quail Egg

S.No	Nutrient	Chicken Egg	Quail Egg
1	Water	76.8%	74%
2	Protein	12.6%	13.20%
3	Fat	11.50%	10.83%
4	Carbohydrate	0.8%	1%
5	Total ash	0.8%	1%
6	Calorific value	547kg/100g	649kg/100g
7	Cholesterol (mg/g yolk)	17.97	16.28
8	Energy (caloric/100g)	121	155
9	Vitamin A (IU/100g)	174	2947
10	Calcium (mg/100g)	34.70	71.81
11	Thiamine (mg/100g)	0.10	0.98
12	Riboflavin (mg/100g)	0.17	7.86

Source: SKIP THE PIE.ORG. The nutrition search engine

It could be observed from the table that the quail eggs are packed with vitamins and minerals even with their small size, their nutritional value is three to four times greater than chicken eggs. Regular consumption of quail eggs helps fight against many diseases which is a natural combatant against digestive tract disorders such as stomach ulcers. Quail eggs strengthen the immune system, promote memory health, increase brain activity and stabilize the nervous system. They help with anemia by increasing the level of hemoglobin in the body while removing toxins and heavy metals (Troutman, 1999-2012).Overall, quail eggs have both essential and non-essential nutrients in which most of them were needed for improving human health. Also quail egg inhibits cancerous growth, straightens immune system by stunning aging in organs, helps to prevent anemia by promoting hemoglobin, is a

remedy to gastritis and stomach ulcers as many reports (Ye *et al.*, 1999; Lalwani, 2011; Squidoo, 2012). Comparatively, quail eggs are having less cholesterol and high protein.

iii. Nutritive value of meat

Comparative statement of nutritive value of chicken and quail meat is presented in Table 3

Table 3

Nutritive Value of Chicken and Quail meat

S.No	Nutrient	Chicken meat	Quail meat
1	Fat	16g/100g	12g/100g
2	Cholesterol	212mg/100g	76mg/100g
3	Carbohydrate	15g/100g	0g/100g
4	Protein	15g/100g	20g/100g
5	Vitamin A	0%/100g	5%/100g
6	Calcium	2%/100g	1%/100g
7	Iron	6%/100g	22%/100g
8	Calories	1100kj/100g	803kj/100g
9	Water	52.74g/100g	69.65g/100g
10	Ash	1.771g/100g	0.9g/100g
11	Thiamine	0.211mg/100g	0.244mg/100g
12	Riboflavin	0.091mg/100g	0.26mg/100g

Source: SKIP THE PIE.ORG. The nutrition search engine

It could be revealed fromthe table that the quail meat islow in cholesterol and high in iron and protein compared to chicken. The chicken meat ishaving high carbohydrate but there is no carbohydrate in meat quail. Quail meat contains five per cent of vitamin A but it is nil in chicken meat.

iv. Economic difference

The difference in cost of production and returns for meat and egg were collected from entrepreneurs and summary is given in Table 4 & 5.

Table 4

Economic Difference between Quail and Chicken Meat

S.No	Quail Meat	Value (Rs)	Chicken Meat	Value (Rs)
1	**Cost per bird**		**Cost per bird**	
	i. Variable cost	28.12	i. Variable cost	107.53
	ii. Fixed cost	6.27	ii. Fixed cost	3.89
	Total	**34.39**	**Total**	111.42
2	**Return per bird**		**Return per bird**	
	i. Gross income	35	i. Gross income	120

	ii. Net income	0.61	**ii.** Net income	8.58
3	**Producer share in consumer rupee**	64.11	**Produce share in consumer rupee**	60.50

Source: Primary data

The cost and return estimate for quails and chicken birds production, producer share are given in Table 4.The total cost accounted for a bird was Rs. 34.39 in quail and that was Rs. 111.42 for chicken. The net income obtained in quail farming was lower (Rs. 0.61 per bird) than that of chicken farm (Rs. 8.58 per bird) but this net income was realized within a month in quail farming and it requires very less floor space and no vaccination. Hence, the entrepreneur can maintain the quail farm in large scale. The producer was realizing 64 per cent of consumer rupee in quail farm because of the less number of intermediaries in marketing of quail.

In spite of a spectacular growth in the poultry sector during the past two decades, a huge gap exists between availability and requirement of poultry products. An increase in per capita consumption by one egg and 50 grams of poultry meat can create employment for about 26,000 persons per year (Kazi, 2003). Hence the difference in economic aspects of egg production of quail and chicken were collected and results are given Table 5

Table 5

Economic Difference between Quail and Chicken Egg

S.No	Quail Egg	Value (Rs)	Chicken Egg	Value (Rs)
1	**Cost per egg**	0.65	**Cost per egg**	2.45
2	**Returns per egg** i. Gross income **ii.** Net income	 2 1.35	**Return per egg** i. Gross income **ii.** Net income	 4 1.55
3	**Producer share in consumer rupee**	65.00	**Producer share in consumer rupee**	85.45

Source: Primary data

It might be seen from Table 5 that the cost of production per egg was found to be highest in chicken (Rs. 2.45)whereas quail cost per egg was Rs. 0.65only. Though the producer share in

consumer rupee was low in quail egg production (65 per cent), the quail egg is available at cheaper rate comparatively to the consumer and net income was almost same in both farms.

CONCLUSION

This study focused on comparison of chicken and quail egg and meat production. Study identified that comparatively, quail egg and meat are having better nutrient content and rearing of quail bird is easy because of the disease resistance nature of the bird.

Quail farming could be more profitable business if the problem related to it can be minimized. The major problems in quail farming as reported by the farmer were high price of feed and inadequate institutional credit for the development of commercial quail farms. Japanese quails are very resistant to disease and therefore there is no need of vaccination for them. But they need some essential vitamins and medicine for the proper health care and physical growth. It was reported that these vitamins and medicine were not supplied by the Government. Quail farmers felt that their knowledge on quail husbandry was not sufficient and therefore they consider the lack of proper training facilities as one of the problems. Another problem hindering the production was getting license forquail farming. By overcoming these problems through government support in terms of providing financial, market facilities and extension services, quail farmers can run the business in a profitable way thereby there is a vast potential for reducing protein deficiency and creating employment opportunities for young people.

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