

## **Buffalo and Buffalo Meat in Thailand**

**Suthipong URIYAPONGSON\***

*Department of Animal Science, Faculty of Agriculture, Khon Kaen University, Thailand*

*\*Corresponding email: suthipng@kku.ac.th*

### **ABSTRACT**

Buffalos are the important domestic animals in Thailand. There were 3.3 million buffalos in 1996, the highest in this region. Currently, the population has dropped to 1.3 million. Meat from buffalo is darker in color compared to beef because of more pigment and less intramuscular fat compared to beef. Panel test and tenderness measurement showed that water buffalo meat was less acceptable than beef. However, buffalo meat is an excellent source of special nutrients. It contains 18-24% protein and 1-3% fat. It has low cholesterol and Triglyceride. Buffalo meat also contains omega 6 and 3 which are important for human health. It is a good source of protein especially for those who are concerned about their health.

**Keywords:** meat production, Thailand, water buffalo

### **INTRODUCTION**

Buffalos are the important domestic animal especially for small holders in the Northeast. The numbers of buffaloes have been rapidly decreasing every year. According to the Department of Livestock Development the number of buffalos has decreased 18% per year. Currently, Thailand has 1.3 million buffalos and approximately 40% are females (520,000 heads). The number of calf production each year is 145,500 heads, half of what we used for meat consumption (200,000 heads) per year. It was accounted for 26,279 tons of meat and the per capita consumption was 0.86 kg per head per year.

### **POPULATION OF BUFFALO IN THAILAND**

The number of buffalos in Thailand rapidly decreased from 3.3 million in 1996 to 1.67 and 1.62 million in 2009 and 2010 respectively. Thailand used to have the highest population in Southeast Asia in 1996 but currently the number is one third compared to Myanmar and Vietnam (Table 1).

The population of buffalos in Thailand in 2011 was 1,234,179 heads. It divided into 362,373 males (29%) and 871,806 females (71%). The females can be divided into 614,403 heads of heifer and 257,403 heads of buffalo cows as shown in Figure 1.

### **BUFFALO PRODUCTION**

Buffalos are raised by small farmers and each farmer had only 2-4 heads for draft, manure, money saving or for family heritage. Few farmers use intensive system for calf production of buffaloes. Farmers have low income and low

Accepted April 10, 2013; Online November 11, 2013.

education and have no plans to activate the younger generations to get involved in the buffalo production system.

### **BUFFALO MEAT - A MAJOR SOURCE OF MEAT PRODUCT**

Buffalo has been used as a major meat in Thailand. Butchers usually sell both meats (cattle and buffalo) at the same price. Butcher shops make more money from buffalo than from cattle. This was due to price of buffalo being lower than cattle with the same weight. Most consumers don't know or don't care about the difference between both meats.

The characteristics of buffalo carcasses are similar to those of cattle. Despite heavier hide and head, the amount of useful meat (dressing percentage) from buffaloes is almost the same as cattle. Mediterranean type buffalo and Zebu cattle steer in Brazil yielded dressing percentages of 55.5% and 56.6% respectively. Swamp buffaloes dressing percentages have been measured in Australia at 53%. Generally buffalo have about 3% lower dressing percentages than cattle. According to the research water buffalo in Thailand had only 47-49% dressing percentages.

Most buffalo meat is derived from old animals slaughtered at the end of their productive life. As a result, much of the buffalo meat sold is of poor quality. But when buffaloes are properly reared and fed, their meat is tender and palatable.

The Asian buffalo meat production accounts to 91-92% of the world. India is the largest buffalo meat producer followed by Pakistan, China, Nepal and Thailand. Water buffaloes are exported for slaughter from India and Pakistan to the Middle East and from Thailand and Australia to Hong Kong. Demand for meat is so great that Thailand's buffalo population has dropped from 7 million to 5.7 million head in the last 20 years, a period in which the human population has more than doubled.

### **MEAT QUALITY**

Buffalo meat and beef are basically similar. The muscle pH (5.4), shrinkage on chilling (2%), moisture (76.6%), protein (19%) and ash (1%) are all more or less the same in buffalo meat and beef. Buffalo fat, however is always white and buffalo meat is darker in color than beef because of more pigmentation or less intramuscular fat compared with beef. Taste panel tests and tenderness measurements showed that the meat of the water buffalo is as acceptable as that of cattle. Buffaloes may retain meat tenderness to a more advanced age than cattle because the connective tissue hardens at a later age, improving buffalo meat quality.

There are several ways to change or improve buffalo meat quality. Feed buffalo with different concentrate and roughage can change the chemical composition of meat. Rakiat (2008) reported that buffalo grazing in Guinea mixed Hamata pasture had better meat composition. It contained less triglyceride and lower ratio of Omega 6:3 which made better eating quality. Sompratana (2008) used concentrate diets at 1.5 and 2% of body weight and Guinea for roughage in 203 kg buffaloes for 350 days. The results showed that meat from buffaloes fed 2% concentrate had lower collagen, shear value and lower TBAR compared to buffalo fed 1.5% concentrate. Naveena et al. (2004) enzyme from curcumin ginger and papaya at 2.5 and 2% aging buffalo meat. The results showed that meat aged with

5% ginger had appearance tenderness and overall acceptability higher than control group

### **CHEMICAL COMPOSITION OF BUFFALO MEAT**

Buffalo meat is an excellent source of several nutrients. Sompratana (2008) and Rakiat (2008) reported that buffalo meat had 74-78% water, 18-24% protein, 1-3% fat and 1-2% ash. The water in buffalo meat decreases while protein and fat increase when the buffalo gets older. Buffalo meat has low cholesterol and Triglyceride (only 56.9 mg/100 g of cholesterol and 1.15 gm/100 gm of triglycerides, respectively). Buffalo meat also had Omega 6 and 3 which are important for human health. The Omega 6 and 3 in buffalo meat are 9.50 and 1.49 % of total fat (Ziauddin et al., 1994). Chemical composition and the Omega 6 and 3 in buffalo meat are showed in Table 2 and 3.

### **HEALTHY DIET FROM BUFFALO**

Buffalo meat has lower fat compared to chicken, beef and fish (46, 69, and 60 %, respectively). Buffalo meat contains less cholesterol (56.9 mg/100g VS 106.6 mg/100 g) and triglyceride (1.38 g/100 g vs 1.77 g/100 g) compared to beef. Moreover, buffalo meat has more essential fatty acids such as omega 6 and omega 3 approximately 6.12 and 2.77% of total fatty acid. The number of Omega 6 is lower than pork and chicken while Omega 3 is higher. Eicopentaenoic acid (EPA) and Decahexaenoic acid (DHA) which are important for brain development is high in buffalo meat compared to beef and pork. Buffalo meat was the good source of CLA (1.83%) which were higher than in beef (1.47%) pork (0.6%) and chicken (0.32%), respectively.

### **REFERENCES**

- Department of Livestock Development. 2011. Statistics of cattle and buffalo in Thailand URL:<http://www.dld.go.th/ict/th/index.php>
- FAOSTAT. 2012. Production: Live Animals.URL: <http://faostat3.fao.org/home/index.html#VISUALIZE>.
- Naveena, B.M., S.K. Mendiratta and A.S.R. Anjaneyulu. 2004. Tenderization of buffalo meat using plant proteases from *Cucumis trigonus* Roxb (Kachri) and *Zingiber officinale* roscoe (Ginger rhizome). *Meat Sci.* 68: 363–369.
- Rakiat, N. 2008. Effect of pasture on meat composition and quality of buffalo meat. *Master Thesis* Department of Animal Science. Chiangmai University. Thailand.
- Sompratana, Y. 2008. Meat quality and fatty acid composition of buffalo fed two difference of concentrate diet Master Thesis Department of Animal Science. Chiangmai University. Thailand.
- Ziauddin, K.S., N.S. Mahendrakar, D.N. Rao, B.S. Ramesh and B.L. Amla. 1994. Observation on some chemical and physical characteristics of buffalo meat. *Meat Sci.* 37: 103 – 113.

**Table 1.** Water buffalo population in Thailand and some Asian countries.

Country	Year		
	2010	2009	1996
Thailand	1,666,650	1,670,510	3,303,590
Myanmar	3,000,000	3,000,000	1,165,620
Vietnam	2,913,390	2,886,600	2,953,900
Cambodia	702,074	739,946	743,928

Source: FAOSTAT (2012)

**Table 2.** Chemical composition of buffalo meat.

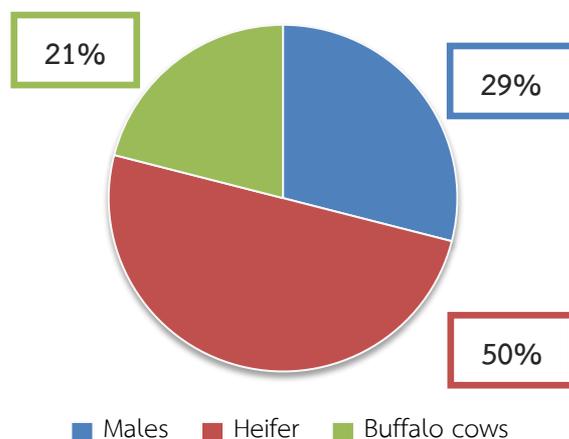
Compositions	(%)
Moisture	74-78
Protein	18-24
Fat	1-3
Ash	1-2

Source: Sompratana (2008) and Rakiat (2008)

**Table 3.** Chemical composition of buffalo meat.

Compositions	(%)
Cholesterol (mg/gm of meat)	56.9
Triglyceride (gm/100 gm meat)	1.15
Omega 6 (% of total fat)	9.50
Omega 3 (% of total fat)	1.49

Source: Ziauddin et al. (1994)



**Figure 1.** Classification of female buffaloes in Thailand.  
Sources (DLD, 2011)