

MEAT AND POULTRY INDUSTRY IN INDIA

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Meat producing animals in India are mainly buffaloes, cattle, sheep, goats, pigs and poultry birds. Livestock refers to the population of meat producing animals. Livestock is an important segment in the Indian agriculture with its significant contribution to the Gross National Product (GNP). It has high impact on the employment potential in rural areas. As per National Sample Survey Organization (NSSO), Government of India livestock activities are preferred by over 90 % of small cultivators and wage - earning farmhand (non - cultivators) households, as a source of supplementary income. About 40 million people are engaged in livestock sector. Organization and development of livestock sector in rural land help meet the local needs, urban requirements and export demand. Thus, livestock sector will boost up the socio - economic status of the country.

About 70% of Indians are meat eaters and additional 3% are egg consumers (Ovarians). The economic policies of Government of India promote business community and researchers in meat and poultry sector in India. Multinational companies are engaged in meat and poultry business in India and they channelize their marketing outlets to international markets. The small and medium entrepreneurs also cater to the needs of people in domestic market.

Modern production and processing techniques play significant role in meat and poultry industry. Packaging and preservation, Hazard Analysis and Critical Control Points (HACCP) concept, Good Manufacturing Practices (GMP), Chilling, Freezing, Individual Quick Freezing (IQF), Irradiation, Emulsion technology, High pressure technology, Fermentation, Hurdle technology and Modified Atmospheric Packaging (MAP) are important in improving quality, safety and value addition to meat and poultry.

Let us study this subject through the following aspects:

1. Features of Indian meat industry
2. Livestock population and meat production
3. Abattoirs and meat processing plants
4. Processed meat products
5. Meat packaging and marketing
6. Byproducts and wastes
7. Machinery and equipment

1. FEATURES OF INDIAN MEAT INDUSTRY

The main features of Indian meat industry are:

- Livestock in India is reared on green pastures and agricultural crop residues, and thus raised on green livestock production system.
- Live animals, viz, Sheep, Goats, Buffaloes, Pigs, Bullocks and Poultry are traded in livestock market for meat production.
- Indian livestock is free from mad cow disease (Bovine Spongiform Encephalopathy).
- Animals are slaughtered (killed) generally by Halal method.
- Buffalo meat is low in fat and cholesterol.
- Slaughtering the animals is done in municipal abattoirs for retail domestic market.
- For export slaughtering is done in integrated mechanized abattoirs.
- Fresh frozen meat is transported in refrigerated containers from production point to ports for export.
- Raw hides / skins are treated and marketed for leather goods.
- Bones are sold for further processing into collagen, gelatin and calcium phosphate.
- Casings are produced from intestines.
- Blood from mechanized abattoirs is sent for the production of pharmaceuticals.
- Souvenirs are made from horns and hooves.
- Blood meal – cum - bone meal and tallow are produced in the rendering plants from offals and bones.
- Pet foods are produced from byproducts.

2. LIVESTOCK POPULATION AND MEAT PRODUCTION

India has the largest livestock population in the world. Goats, sheep, pigs, cattle, buffaloes and poultry birds are the major meat animals (Table 1). India possesses about 4500 urban abattoirs, 36000 illegal slaughter houses, 12 modern abattoirs, 220 meat processing plants under ministry of food processing industries and 7 pork processing units.

Goats, sheep, poultry and pigs are mainly slaughtered for domestic consumption. Meat from cattle and buffaloes is mainly for export. India is a largest producer of buffalo meat in the world. Buffalo meat is considered as black gold and is likely to result in to pink revolution in India after green revolution in 1960s, white revolution in 1980s and blue revolution in 1990s. About 1 million male buffaloes are sacrificed in infancy resulting in to the loss of Rs 160 billion annually. Rearing of male buffaloes for meat production is preferred. There is a Government of India ban on the slaughter of cows and their progeny. However, slaughter of old (>15 years of age) cattle is permitted in Kerala, West Bengal and North Eastern states. Transport of meat animals is done in large scale to

Kerala, West Bengal, North Eastern states and Bangladesh in truck or on foot in very inhumane conditions. This can be avoid cruelty to animals. Improper transportation leads to about 30% weight loss. Slaughter takes place in licensed slaughterhouses and clandestine slaughter is also prevalent. Red meat production in India is about 6.2 million tons (Table 1). Highest quantity of meat is produced in India from cattle and buffaloes followed by sheep and goats. Cattle and buffaloes, though not reared for meat production, are brought for slaughter after the completion of their productive period. The per capita availability of red meat is approximately 10 g per person per day in India as compared to about 25 g per person per day in the world. Rabbit, quails, turkeys and ostrich are emerging as newer sources of meat in India.

Poultry industry is well organized in India. There has been an increase in poultry production in the past three decades. India is the fifth largest egg producer in the world. The annual egg production is 3.9 million tons and poultry meat production is 2.4 million tons. The annual growth rate of production of eggs and poultry meat is 4.8 % and 10.0 %, respectively. Eggs and poultry meat are the well - accepted sources of animal protein. Almost 75 % of eggs and chicken meat are consumed in urban and semi - urban areas. Bulk of the commercial poultry farms is located in cities, urban and semi - urban areas. The national per capita availability of eggs is 35 and in urban areas and it is as high as 90 - 100 in metro cities, while in rural areas it is barely 10 - 12. Poultry meat is high in protein, low in fat, low in cholesterol and provides vitamins and trace elements. Per capita availability of poultry meat is around 500 g.

3. ABATTOIRS AND MEAT PROCESSING PLANTS

The quality of meat produced in the existing slaughterhouses is not satisfactory, unhygienic and carries high levels of microbial contamination. Though Indian way of cooking kills many of the microorganisms in meat, cross contamination of the products eventually occurs under the prevailing conditions of meat handling. Recovery of byproducts is not properly handled and processed in the existing slaughterhouses. Enormous quantities of byproducts are wasted. It is therefore necessary to improve the conditions in the slaughter houses or to establish small sized or medium sized modern or semi - modern abattoirs in metro cities, urban, semi - urban and rural areas. Also it is necessary to improve meat handling practices, recovery and effective utilization of byproducts and waste treatments for pollution control. There are 9 meat processing plants under private sector and 2 plants under public sector in India (Table 2).

4. PROCESSED MEAT PRODUCTS

Under the processed meat products ready – to - cook, ready – to – eat and ready – to – serve or the products that require less time for preparation are available. They provide convenience to the consumers. Only about 3% meat produced in India is processed for production of ready – to - eat products. The trend for consumption of processed meat products is increasing in domestic market. Export of processed meat products is also increasing. New export policies boost up the export of processed meat products to various countries. The processed products include sausages, ham, bacon and canned products. Traditional products such as tandoori chicken, kabab, tikka, meat fry, meat curry, kheema, biriyani, meatballs, kurma and pickles are consumed in large quantities in the country. Recently Central Food Technological Research Institute (CFTRI), Mysuru

has developed processes for the preparation of egg based convenience products such as egg pickles, egg wafers, egg cubes etc. These products have domestic as well as export market for ethnic groups. Thus kitchen products are transformed into market oriented convenience products in the years to come. Recently fast food restaurants are coming up in urban and metro cities in India. The outlets for domestic market are fast food restaurants, cafeterias, hotels, airlines, star hotels and railways. Cost is the main constraint for popularization of processed and convenience products. This can be solved by using cheaper meats, tough meat, trimmings, vegetables and cereals for product development. Diversification to frozen meat products (ready – to - cook, ready – to - serve and marinated) is a new facet and these products are easily accepted in export as well as domestic market.

It is necessary to develop appropriate manpower for handling operations. The personnel such as butchers, operators, processors, supervisors and managers need to be exposed to scientific techniques and modern meat processing methods to boost up the quality of meat and meat products. The levels of training are to be designed depending on the needs of the industry. Newer standards and specifications are being developed and enforced by Food Standards and Safety Authority of India (FSSAI). Training facilities are available at Central Food Technological Research Institute (CFTRI) at Mysuru, Indian Veterinary Research Institute (IVRI) at Izatnagar and also at Veterinary Colleges.

5. MEAT PACKAGING AND MARKETING

Well integrated marketing system does not exist in India for meat and meat products. Most of the meat sold in India is in fresh unpacked form. Meat is packed only in some organized meat factories and in export houses. Meat packaging plays a vital role in marketing and preservation of meat and meat products. The main purpose of packaging is to protect the meat products from microbial contamination, light, oxygen and any physical damage. A good packaging makes the products more appealing to the consumer and provides longer shelf life to the product. Simple packaging systems (such as low density polyethylene films or shrink package) are quite useful for domestic market. Modern packaging systems like vacuum packaging and modified atmosphere packaging (MAP) encourage export market. Frozen buffalo meat is a major export item. The major importing countries are Malaysia, United Arab Emirates (UAE), Oman, Kuwait, Saudi and Bahrain. A limited quantity of sheep and goat meat is also exported to these countries. Our country also exports animal casings to Netherlands, Spain, Japan, Portugal and Germany. Bones, skins / hides and leather are also exported. Establishment of meat corporations improves the marketing system so that the consumers would get the quality meat and meat products at reasonable prices. The improvements should be based on (i) organization of selling live animals, (ii) primary, secondary and tertiary processing, (iii) transport, (iv) storage and (v) retail sale. According to Ministry of Commerce, the potential for export of buffalo meat is about Rs 100 billion.

6. BYPRODUCTS AND WASTES

Effective recovery and utilization of byproducts is the lifeline of the industry. This will reduce the cost of production, give better economic returns to the producers and reduce the problems of pollution and health hazards. Byproducts constitute to an extent of 45 - 55 % of animal slaughter. The byproducts are blood, head, legs, hides / skins, intestines, stomachs, horn and hoof, glands, lungs, liver, heart, oesophagus, tongue, trachea, kidneys, testes, ovaries *etc.* Poultry slaughter also generates enormous quantity of byproducts. There is a loss of 15 - 20 % due to non - utilization and under - utilization of various valuable byproducts. If scientific methods of processing are advocated in abattoirs, better quality of skins / hides would be available to the leather industry. There are many byproducts that have medicinal values too.

7. MACHINERY AND EQUIPMENT

The machinery plays vital role in the production of hygienic meat. The equipment needs for small sized units are minimal. There is a need for organized machinery set up for capacities of 100 large animals and 1000 sheep / goats per shift per day. There is a great deal of mechanization in slaughterhouses worldwide. The auxiliary machineries, *e.g.* power hoist conveyor system, effluent treatment plant, pump, chilling, blast freezer, frozen storage are indigenously available. A few machineries, *e.g.* power splitting pneumatic skinning knives and brisket saw are to be imported. The sophisticated equipment can also be manufactured in the country to meet the forth coming demand.

CONCLUSION

India has the largest livestock population and is a largest producer of buffalo meat in the world. Goat, sheep, pigs, cattle, buffaloes and poultry birds are the major meat animals in India. Goat, sheep, poultry and pigs are mainly slaughtered for domestic consumption. Meat from cattle and buffaloes is mainly for export. Over 90 % of small cultivators and daily wage population (non- cultivators) are engaged in livestock activities as a source of supplementary income. Development of livestock sector in rural land would meet the local needs, urban requirements and export demand. Thus, livestock sector will boost up the socio - economic status of the country. Poultry industry is well organized in India. There has been a phenomenal increase in poultry production in the past three decades. India is the fifth largest egg producer in the world.

Meat produced in the existing slaughterhouses is poor in quality, unhygienic and carries high levels of microbial contamination. It is therefore necessary to improve the conditions in the slaughterhouses or to establish small sized or medium sized modern or semi - modern abattoirs in metro cities, urban, semi - urban and rural areas and also bring improvements in meat handling practices, recovery and effective utilization of byproducts and waste treatments for pollution control.

Table 1. Livestock population and meat production in India

Animal	Population, million (Census-2013)	Slaughter, %	Carcass Wt , kg	Meat production, million tons	
				India	World
Cattle	189.0	10.6	138	1.00 (1.58%)*	63.36
Buffaloes	109.4	10.6	138	1.61 (43.3%)*	3.72
Sheep	63.8	24.8	12	0.24 (2.8%)*	8.56
Goats	134.0	58.7	10	0.51 (9.5%)*	5.37
Pigs	10.1	95.0	35	0.35 (0.3%)*	113.03
Poultry	731.7	-	-	2.36 (2.2%)*	108.67
TOTAL				6.21 (2.0 %)*	302.39
Egg				3.86 (5.6%)*	68.26

*% of world

Source: FAO 2014.

Observations:

- Largest quantity (2.6 million tons) of meat produced in India is from buffaloes and cattle followed by poultry (2.4 million tons) and sheep and goats (0.75 million tons).
- Meat production in India is only 2 % of the world meat production.

Table 2. Major integrated meat processing plants in India

Company	Animals processed	Locations	Annual capacity, metric tons
Allana Sons	Buffaloes, sheep, goats	Aurangabad, Unnao, Kolkata, Hyderabad, Sahibabad	420,000
Hind Agro-Industries Ltd.	-do-	Aligad, Sahibabad, Meerut, Khurja, Delhi	235,000
Alkabeer Foods	-do-	Hyderabad	60,000
Arabian Exports	-do-	Koregaon (Maharashtra)	50,000
Fair Exports	-do-	Barabanki (UP)	50,000
Punjab Agro Foods	-do-	Bassi (Punjab) Chandigarh	50,000
MKR Foods	-do-	Nanded (Maharashtra)	40,000
Government	-do-	Deonar (Maharashtra)	50,000
Government	-do-	Goa	10,000
Venkeys India Ltd	Poultry	Pune (Maharashtra)	1 million birds
Suguna Foods Pvt Ltd	-do-	Coimbatore, Tamil Nadu	18,000

Source: Mahendrakar 2007.