



Package of practices for wholesome meat production



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1.0 Preamble

Food safety is the practice of making sure that people have the healthy food they need for an active, healthy lifestyle. Present day consumer demands hygienically processed pathogen free meat with defined eating qualities and minimal impact on the environment. Contamination of meat with bacteria takes place during slaughter and dressing and continues right through until the time it is eaten. It is therefore best to proceed with extreme care along the route from shed to shackle. Wholesome meat production involves a host of practices starting from animal loading at the farm, their transport, care at lairage, stunning, slaughter and dressing, decontamination, chilling, deboning and packing. To establish Good Management Practices and HACCP protocols, an experimental abattoir has been established at NRC on Meat with required infrastructure suitable for Indian situations. Over years of experience through research and training, these practices are standardized and could be transferred to entrepreneurs for wholesome meat production.

Brief description of protocols

Exposing animals to various kinds of stress not only results in higher weight loss, bruising but also leads to conditions which affect meat quality like Pale soft exudative (PSE) and Dark firm dry (DFD) Meat. Details about handling of animal, condition of the transport vehicle, stocking density and care during transport will help the meat producer to reduce the level of stress on animals and improve the quality of the meat. Further, pre-slaughter care at lairage and interventions like watering, feeding, lairage design and environment can have greater impact on quality and shelf life of meat. Adequate training to entrepreneurs on stunning, the process which makes animals unconscious, not only required for humane method of slaughtering animals but also avoid the meat quality problems associated with improper stunning. Dressing operation which involves skinning and evisceration is the important point of contamination. Theoretical elaboration and hands on training on complete bleeding, flaying and evisceration is essential to restrict the contamination of the edible parts. Practices like tying esophageal and rectal end of G.I. tract is crucial to avoid contamination of the carcass with fecal materials. Separating inedible and edible offals and processing them at designated places also necessary to avoid cross contamination. Stimulation of carcasses immediately after dressing by passing an electric current is another important intervention to hasten the onset of rigor mortis by promoting rapid pH fall and also improving the tenderness of meat.

Even after careful handling, the carcass surface may carry a certain number of microbes. Washing carcasses with pressurized water, chlorinated water (maximum 100 ppm) are some of the important interventions to reduce microbial load of meat. Hygienic requirements demand that carcass sides be cooled as soon as

possible after weighing. Chilling immediately post-slaughter reduces the surface temperature to a value below the minimum growth temperature for many pathogens. Moreover, keeping the carcass/meat at this temperature improves the tenderness and flavour. The carcass should be chilled at the temperature of 0 to 5°C for 12-24 hrs to attain pH of 5.8 – 6. Temperature and relative humidity of the chiller, arrangement of carcasses in the chiller, duration of chilling have an impact on the quality and economics of meat production.



Good meat manufacturing Practices

Ideally the meat cutting/deboning should be carried out in climatized rooms (approx. + 10°C) with low air humidity. An appropriate way of deboning and making specialized cuts plays important role in determining the economics of meat marketing. Meat needs to be packaged to prevent contamination, color deterioration, loss of moisture, odor pickup, oxidative rancidity etc. It also helps in easier transport, display of necessary information and to convince consumers. Various packaging technologies viz., tray with over wrap packaging, shrink film packaging, vacuum packaging, modified atmosphere packaging (MAP) have been standardized at NRCM to preserve the quality attributes and improve the shelf life. Personal hygiene of the people, who process, pack and sell meat and meat products play a major role in the safety of food products. They must make sure that the meat is handled appropriately and kept at proper temperatures.

3.0 Benefit to stakeholders

The demand for quality meat and meat products is increasing day by day. The meat processor should be equipped to produce wholesome meat by educating and providing hands on training on basic principles of handling of food animals, clean meat production, their storage and transportation. The expertise available at ICAR-NMRI could be transferred to meat producers/entrepreneurs for wholesome meat production.

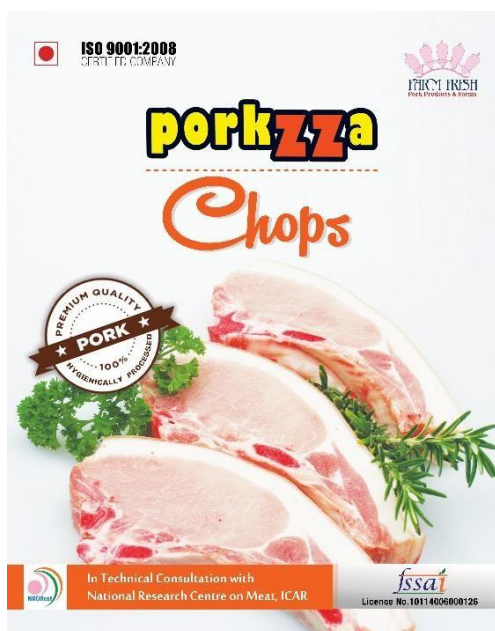
1. Creating awareness among the various stakeholders about the importance and benefits associated with clean and wholesome meat production. From the year 2011 to 2017, about 150 were provided hands on training on clean meat production.
2. Providing refresher training to veterinary and public health official in the production of hygienic meat to protect the meat consumer from meat borne diseases. About 25 veterinarians and quality control personnel training on meat inspection and assessment of meat food safety.
3. Providing consultancy and licensing of technologies through various entrepreneurs and Department of Animal Husbandry/ Government bodies to establish slaughterhouse/ meat retailing units. Ten consultancy and licensing of technologies were provided to establish slaughterhouse/ meat retailing units.



Training programme on clean meat production at ICAR-NMRI



Pork slaughter facility established by entrepreneurs



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