

Role of Veterinarians in Food Safety

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Abstract

Veterinarians being involved in animal health play a vital role in management, treatment, prevention and control of animal diseases. Large portion of the human population relies on animal origin food products like meat and milk products. Safety of these food products is a major concern, since these food products may transmit pathogens to humans as there are several zoological diseases which are spread by contaminated food. Some common pathogens reported in foodborne diseases are *E. coli*, *Listeria monocytogenes*, Salmonella, Brucellosis, *Mycobacterium bovis*, Campylobacter etc. *T.solium* (Pork tapeworm), *T. saginata* (Beef tapeworm) have humans as definitive host. Instead of just focusing on the final product, veterinarians along with other professionals involved in food safety, work on preventing and eliminating possible health risks that may compromise with the safety of food. Modern principles of food safety are on the basis of estimation of possible hazards, their identification, and planning the strategies to eliminate these hazards. Monitoring of the livestock product is a pivotal measure in assuring food safety pertaining to carcinogenic and antibiotic residue persistency. Important aspects of the role a veterinarian play in food safety involve inspection of products, auditing the production facilities, management of animal health, and carrying out public health programs. Veterinarians employed as sanitary officers, toxicologist, microbiologists, epidemiologists, parasitologists, public health professionals, environmental health professionals work towards the safety of food. This unit works under the competent authorities.

Introduction

Veterinarians are associated with planning, enacting the programs related to food safety. These programs look upon food safety, and quality. Food safety is best assured by evaluating risk factors, identifying them, and management of risk factors. Collaborative effort, co-operation, and good communication among the members of different professions

working as a unit in food safety is needed for effective success. Food safety can be best analyzed by considering all members of food chain. The “One Health” concept lies on well being of human health as well as animals and plants relies heavily on food safety

Approaches in food safety

Advancements towards food safety have been evolved and refined over the period of time. Modern food safety standards are a result of this transition. Previous systems were more inclined on hygienic practices. Modern systems are based on Standardization of parameters in food safety, identification and evaluation of critical values of hazards or risk factors. (HACCP- Hazard Analysis and Critical Control Points) Impact of a risk-based approach in ensuring food safety is promising.

The regulatory authority

- Regulatory bodies work on setting appropriate standards, related with production procedures, and identification and elimination of the hazards. Regulatory authorities have the right and liability to apply sanction in case of compromise with safety of the food product.
- These authorities work under the government departments, but private sector is also free to carry out food safety checks by following government norms for the purpose of quality control.

Role of Veterinarians in food safety

Veterinarians are directly and indirectly involved in food safety. Primarily veterinarians work on animal health, by means of treatment of diseased animals, prevention and control of spread of disease. Inspection of animals from which animal origin food products are to be obtained is a remarkable role veterinarians play in ensuring food safety. Ante mortem inspection and inspection of meat are essentials to the decision of their safety. If animals are found to be diseased it won't be allowed to slaughter, if meat is found to be condemnable, it will be discarded. Auditing of the production facilities in several diseased conditions as well as inspection of those sick animals, and the analysis of their products are the major activities related to the safety of food, for which veterinarians have to perform a crucial role. Though there are other professionals involved, veterinarians perform key and core roles in ensuring food safety and mitigating health hazards.

Some significant conditions related to slaughter animals.

Since a large human population consumes, poultry meat, beef, pork, and other meats, it's necessary to judge the meat and inspect these meat animals for the diseases, infections and other conditions that may compromise human health on consumption. Veterinarians are supposed to check these conditions, and decide the suitability of meat animals for the slaughter and further human consumption. Following are some of examples related to this:-

Disease Judgement of Slaughter

1. Parrot fever/ Ornithosis/ All the birds are disallowed for slaughter.
Psittacosis
2. Fowl typhoid All the birds are disallowed for slaughter.
(S. Gallinarum)
3. Botulism/ limberneck All the birds are disallowed for slaughter.
(*Cl. Botulinum*)
4. Ranikhet/ New Castle Disease Birds in Acute stage of disease are disallowed for slaughter.(APMV-1)
5. Chronic Respiratory Disease Birds in Acute stage of disease are disallowed for slaughter.- CRD (*M. galliespticum*)
6. Infectious Bronchitis Birds in progressed condition are marked as unfit for
7. (*Gamma coronavirus*)slaughter. Recovered birds are allowed for slaughter,But doubtful.
8. Fowl Cholera (*P. multocida*)Birds in septicaemic condition are disallowed for slaughter. Other birds are allowed for slaughter, but doubtful.

General pathological conditions of carcass and their verdict

1. **Bruise:** Bruised parts of the carcass are removed. And if bruise is extensive and it alters v tenderness and muscular consistency the whole carcass is discarded.
2. **Pigmentation:** If Pigmentation is restricted to certain areas, remove that part. If Pigmentation is extensive, discard the whole carcass
3. **Jaundice:** Carcass totally discarded if jaundice appears to be severe. But may be passed if the carcass appears normal after being kept in a meat freezer, though these meat is safe for human consumption, on an ethical basis it should be discarded. As consumers Choose not to buy such meat.

4. **Haemorrhage:** Discard the part if the haemorrhage is small, discard the whole carcass if the haemorrhage is extensive.
5. **Tumours:** If benign, and smaller, the organ is removed and the carcass is passed.
6. **Abscesses:** If abscess is of infectious origin, discard the whole carcass.

Fate of meat carcass with zoonotic parasitic infestations.

1. ***T. Saginata (Cysticercusbovis)*:** Causes Beef measles, damaging the meat. In this case, carcass showing severe involvement is discarded fully. If only a small part is infested, remove that part, and allow the remaining carcass after processing.
2. ***T. Solium (Cysticercuscellulosae)*:** Causes Pork measles, damaging the pork. In this case, carcass showing severe involvement is discarded fully. If only a small part is infested, remove that part, and allow the remaining carcass after processing.
3. ***E. granuloses(Cysticercusovis)*:** Discard the affected organs.
4. ***S. fusiformis (sarcocystosis)*:** Discard the whole carcass when infestation is severe.

Discard the affected organs when infestation is restricted to particularorgan.

Conclusion

Food safety pertaining to livestock product is a major challenge now-a-days with rampant use of antibiotics which needs to be properly addressed by the veterinarians with formulation of certain stringent legislation. Awareness for proper disposal of animal carcasses should be given to the animal owners otherwise the thrown away dead carcasses pollute and contaminate the under-ground water as well vegetations. Screening of animal diseasesat earliest should be done before the infectious etiological agent might secreted through milk or localised in muscles thus jeopardising the sanctity of consuming livestock products. Role of veterinarians in food safety is a major challenge in current scenario which needs to be addressed by the policy makers with formulation of suitable stringent regulations by involving all the stake holders.