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## **Identification and management of biological hazards in the beef chain in Pakistan**

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The livestock sector plays an important part in the socio-economic development of agriculture based economy of Pakistan. This sector is a main supplier of raw material to many associated food processing industries, which produce meat and its by-products, milk, leather, gelatine, pharmaceutical products etc. and create markets and capital.

In Pakistan's beef chain many players are involved, from producer to local seller and exporter. As regards dairy herds, males and purpose-fattened veal calves are primarily sold on the local market, which means that carcasses and parts thereof will usually end up at the local butcher; only a very small percentage is destined for export.

The demand for fresh natural food, free from diseases, pesticide, fertilizers, allergens, additives, preservatives and GMO's, is increasing in the developed as well as the developing world.

Current structure of the beef chain shows that there is lack of biosecurity at primary production and it is unlikely that this situation will readily change in the short term future. Thus, meat inspection, as a sort of 'end product control' has to be relied upon for revealing deficiencies in primary animal production and for detecting and eliminating meat borne public health risks. Pakistan relies on classic meat inspection (including incision and palpation) which focuses on identifying macroscopic pathological-anatomical alterations. However, such an approach fails to detect animals which are symptomless carriers of zoonotic pathogens, which are shed during transportation and in lairage and will inevitably result in microbial contamination of meat surfaces during slaughtering and processing.

Major biological hazards associated with meat include spoilage bacteria, pathogenic bacteria, viral pathogens and parasites.

For control and management of biological hazards in the beef chain in Pakistan many institutions at federal and provincial level are involved. These institutions have multi-dimensional responsibilities for this task. Federal institutions look after the import-export and legal support provision while provincial institutions are involved in implementation and macroscopic inspection. To cope with flaws in whole process a new mode of working is tried, i.e. new authorities for food safety, which are already working successfully. But having mentioned all steps, it must be recognized that to a large amount, beef safety in Pakistan relies on cooking and prevention of re-contamination as the ultimate steps to control all foodborne biological hazards at the end of beef supply chain.

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