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Mini Review

Control of Chemical Dangerous Factors on Powers from the Production and Circulation of Meat of Slaughtered Animals

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Introduction

In order to ensure the safety of slaughtered meat and the accuracy of information about them, it is necessary for food market operators to produce and handle a traceability system in addition to the HACCP system, which will prevent the circulation of dangerous, non-human meat of slaughtered animals [1]. State control over food safety should be risk-oriented, depending on the risk categorization, as the producer is directly responsible for the safety of the food. That is why, through cooperation and fostering partnerships between the market operator, regulatory authorities and consumers, it helps to carry out preventive control rather than corrective action [2]. It is therefore urgent to develop techniques for the prevention of chemical risk in the production and circulation of slaughtered meat when establishing control points [3]. The purpose of the work is to establish critical control points for establishing risk-based controls for the detection of a chemical hazard in slaughtered animals for its production and handling.

Research Methods

The studies used beef, pork, lamb and goat samples, which were sampled at meat production facilities, wholesale bases, supermarkets, agri-food markets. In order to establish the processing of meat with detergents for hiding the deterioration of meat, the development of microorganisms, express methods have been developed, which have been tested in state veterinary medicine laboratories and for which Ukrainian Patents for utility model have been obtained for №№ 81943, 81944, 81945, 102019, 102020, 116830, 116831, 132813, 132814, 132815.

Results of the Research

Determine the safety of meat, rapid methods of detecting chemical factors for meat processing were applied: formalin – for the use of a mixture of concentrated nitric and sulfuric acids; hydrogen peroxide – concentrated sulfuric acid and potassium starch; acetic acid – sodium hydroxide solution with a mass concentration of 0.1 mol/dm3 and indicator alcohol solution of phenolphthalein with a mass concentration of 1.0 %; potassium permanganate – a solution of sulfuric acid with a mass concentration of 0.5 mol/dm3 in the amount of 0.4–0.5 cm3; alkaline detergents – alcohol solution of bromocresol green with a mass concentration of 0,01%; alkaline disinfectants – alcoholic solution of chrome dark blue with a mass concentration of 0,01%; chlorine solution – solutions of potassium iodide, water-soluble starch and concentrated HCl; sodium bicarbonate solution – alcoholic solution of chrome dark blue with a mass concentration of 0.5% [4]. The study identified critical control points for establishing risk-based controls for the detection of a chemical hazard in slaughtered animals (beef, pork, mutton and goat) for its production and handling: at its production and storage facilities (at wholesale bases) – frozen meat of slaughtered animals suspended for 20 days in storage cells at temperatures from minus 2°C to minus 3°C with relative humidity of 90%; frozen meat suspended in storage cells at minus 12°C at 95% relative humidity – beef for 8 months; pork – for 3 months; mutton and meat of goat – for 6 months. And when selling meat of slaughtered animals in supermarkets at temperature (4±2) °C and relative humidity of 85 % for 2 days; as well as at temperatures from 0°C to minus 1°C

for 16, (for beef) and 12, the day of sale. In the sale of beef, pork, mutton, meat of goat in the agri-food markets at temperatures of 0–6°C for 3–4 days of sale. Because for 21–22 days frozen meat is stored in storage cells at temperatures from minus 2°C to minus 3°C with a relative humidity of 90 %; frozen meat of beef for 9 months, meat of pork for 4 months, mutton and meat of goat for 7 months at minus 12°C at 95 % relative humidity; for 3–4 days meat is cooled at (4±2) °C and relative humidity of 85 %, as well as from 0°C to minus 1°C for 17–18 (for beef) and 13–14 days of realization – was treated with detergents. Consequently, TACCR and VACCP systems must be implemented at slaughterhouse production and handling facilities to prevent deliberate tampering [5]. These approaches are currently needed to manage the protection of the food supply chain from the risk of deliberate contamination. Therefore, we have developed and patented chemical risk assessment techniques for the production and handling of slaughtered animal meat.

Conclusion

At the facilities for the production and circulation of safe meat of slaughtered animals – beef, pork, lamb, goat, and compliance with the proper hygiene requirements, to carry out state risk-oriented control taking into account the control points of the chemical risk determination management, to evaluate it and to prevent its occurrence, using patented express methods with 99.9 % confidence.

Acknowledgement

None.

Conflict of Interest

None.

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