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Safety of frozen liver for human consumption

Ghada A.K. Kirrella^{*}, Azza M.M. Deeb, Reda Mohamed Ibrahim Abdallah

Food Control Department, Faculty of Veterinary Medicine, Kafrelsheikh University, Kafr El-Sheikh, Egypt

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ABSTRACT

The objective of this study was to ensure and evaluate the safety of imported frozen beef liver traded in supermarkets of Kafr El-Sheikh Governorate, Egypt, through detection of *Salmonella typhisvariae*, *Salmonella enteritidis*, *Escherichia coli* O157:H7, antibiotic residues, and aflatoxin B₁ residue. Fifty samples of imported frozen liver were randomly collected from different shops at Kafr El-Sheikh Governorate for isolation of *S. typhisvariae*, *S. enteritidis*, and *E. coli* O157:H7. The results revealed that for both microorganisms 4% of the examined samples prepared to contain *Salmonella* and *E. coli* O157:H7 organisms, according to the colonial character on Haskoquin *Salmonella* ABC agar media and Haskoquin SMAC-BCBG agar media. According to biochemical and serological identifications, both organisms could not be detected in the examined samples. A total of 29 (58%) samples were positive for antibiotic residues, using the Frelat test (a broad-spectrum screening test for the detection of antibiotic residues in meat) at or below the maximum residue limits. In addition, aflatoxin B₁ was detected in one (2%) samples with a concentration of 1.1 µg/kg. The results reflect that there was good hygiene practice for handling and preparation of frozen liver while selling to consumers. However, a high percentage of antibiotic residues reflect ignorance of withdrawal time before slaughtering of animals as well as misuse of antibiotics in veterinary fields. Furthermore, aflatoxin B₁ residue was detected in examined frozen liver samples at a concentration below the maximum residual level, which is not enough to cause threat to humans, but it is enough to cause problems if it is eaten regularly infect contamination of animal feed with aflatoxins.

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1. Introduction

Beef liver provides us with significant amounts of proteins, vitamins, and fat that keep our body healthy [1]; however, liver products are considered a high-risk food as these are highly nutritious and serve as an ideal medium for bacterial growth. Contamination due to poor hygienic practices by food

handlers and instruments such as cutting boards, machines, and all other related materials used for preparation of liver to sell to consumers. *Salmonella typhisvariae*, *Salmonella enteritidis*, and *Escherichia coli* O157:H7 are potentially pathogenic to humans and animals, and are capable of producing serious infections and food-borne zoonosis [2,3]. Salmonellosis in humans is associated with the consumption of contaminated

^{*} Corresponding author. Food Control Department, Faculty of Veterinary Medicine, Kafrelsheikh University, Kafr El-Sheikh 33526, Egypt. E-mail address: ghada.kiralla@vet.kfu.edu.eg (G.A.K. Kirrella).

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