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## Antimicrobial resistance in *E. coli* isolates recovered from a pig slaughterhouse line in Serbia

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### INTRODUCTION

The aim of the present work was to investigate the prevalence of antimicrobial resistance of *E. coli* isolates and especially the presence of multidrug resistant strains within a pig slaughter line. The prevalence and transmission of antimicrobial resistant microorganisms has been recognized as a serious global public health problem. *E. coli* is generally present on pig carcasses, and it is widely used as an indicator of fecal contamination. Moreover, some serotypes are pathogenic. In Serbia, antibiotics are used for bacterial diseases therapy as well as for growth promoters in subtherapeutic doses. The quality and safety of pork are of high interest since pork is highly consumed in Serbia. An assessment of cross-contamination events was performed by monitoring the presence of *E. coli* along the slaughter line.

### MATERIAL AND METHODS

Sampling was performed in a medium scale slaughterhouse processing maximum 1000 pigs per day. Pigs were obtained from different small and medium-sized pig farms. Sponge sampling of 16 pig carcasses and 6 environmental surfaces was performed. Determination of antimicrobial resistance of the *E. coli* isolates found was performed by the disk diffusion method and 14 types of antibiotic discs were used.

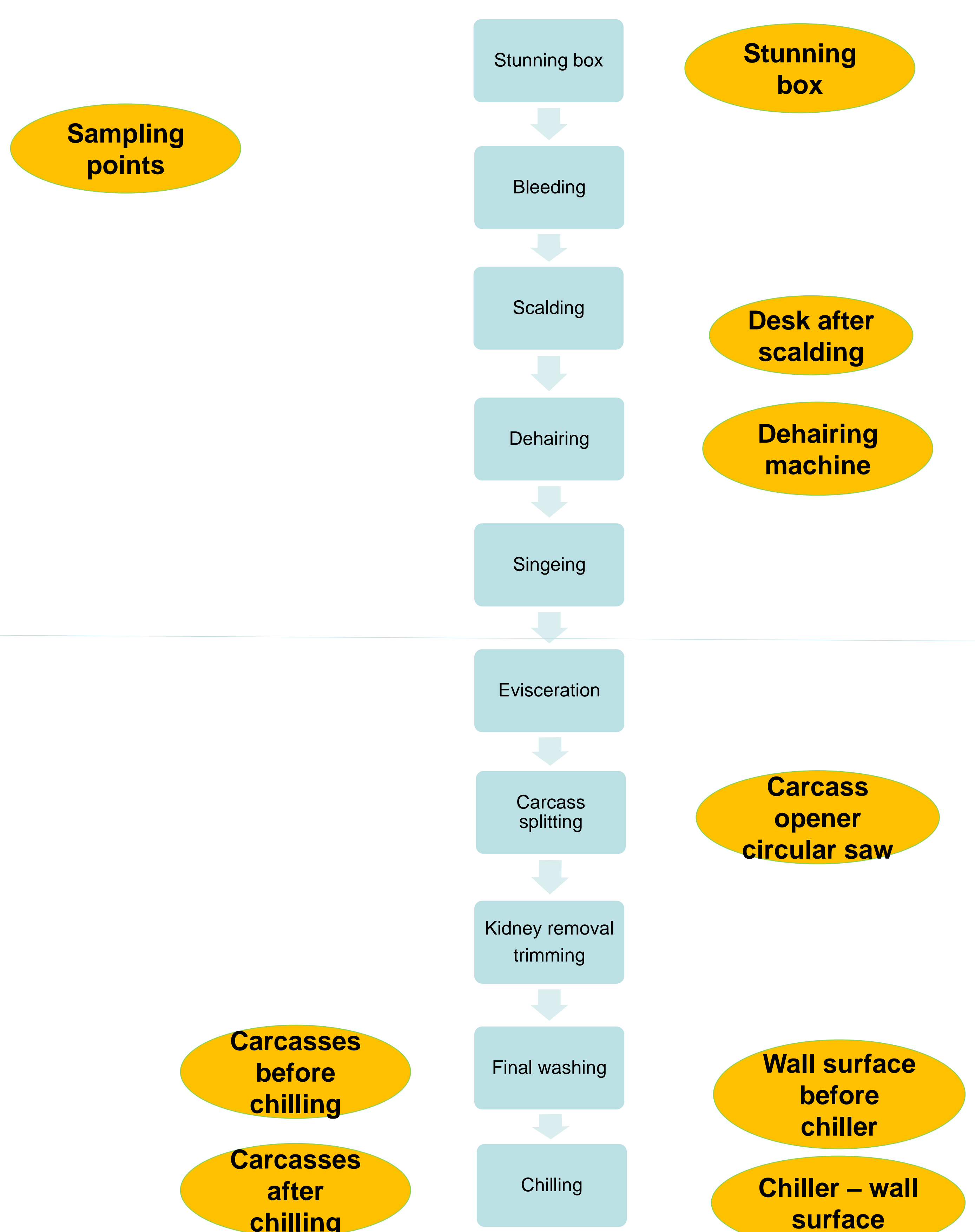
### RESULTS

The results showed that *E. coli* was isolated from 86.4% of the 22 swabs taken. The proportion of antimicrobial resistant isolates was 84.2%. The presence of multidrug resistance (defined as resistance to three or more antimicrobials) was detected in 52.6% of the isolates. Resistance was registered for tetracycline (63.2%), ampicillin (52.6%), streptomycin (47.4%), chloramphenicol (36.8%), trimethoprim (31.6%), trimethoprim-sulfamethoxazole (31.6%), nalidixic acid (15.8%), cefpodoxim (5.3%) and cefotaksim (5.3%). All isolates were susceptible to ceftazidime, ciprofloxacin and gentamicin. The profiles of antimicrobial resistance varied between the 8 different sampling sites which suggest that some process stages lead to decreases and some to increases in number of antimicrobials to which isolates showed resistance. The largest number of antimicrobials to which isolates showed resistance was 11 in isolate from stunning box.

### CONCLUSIONS

It is very important to maintain the microbiological quality of all equipment surfaces from slaughterhouse operations in proper condition to reduce the prevalence of *E. coli* including the multiresistant strains. Proper hygienic measures are the main prerequisites for prevention of spreading of antimicrobial resistance within slaughterhouse line and consequently through food chain. More analysis are required in order to identify the transmission of antimicrobial resistance from contact surfaces to and critical control points in cross contamination within slaughter line.

FIGURE 1. DIAGRAM –SAMPLING POINTS



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