

PDF - ANTIBIOTICS RESISTANCE PROFILE OF ESCHERICHIA COLI ISOLATED FROM APPARENTLY HEALTHY DOMESTIC LIVESTOCK IN SOUTH-WEST NIGERIA (OYO STATE) - researchcub.info

ABSTRACT

This study was conducted to determine the antibiotic resistance profile of Escherichial Coli isolate from apparently healthy domestic livestock viz: cow, goats and chicken from Osun State Nigeria. E. Coli was isolated using Eosin methylene Blue Agar (EMB) and identified by conventional microbiological technique. The isolate were tested against 14 antibiotics using the disc diffusion method. A total of 42 different antibiotics resistance profile were observed with each isolate showing resistance to at least four or more drugs tested. Generally, the E. coli isolates showed resistance rates of 93.8% to Ampicillin; 15.3% to Chloramphenicol, 52.7% to cloxacillin, 74.3% Erythromycin, 20.9% to Gentamicin, 53.8% to Penicillin, 17.7% to Streptomycin, 67.3% to Tetracyclin, 21.1% to Ceftazidime 70.7% to Cefuroxime, 20.5% to Cefixime, 28.8% to Ofloxacin, 58.6% to Augmentin, 27.2% to Nitrofurantoin 27.3% to Ciprofloxacin. Statistical analysis showed that average number of resistance phenotypes per isolate was significantly higher for cow compared with poultry. A significant public health concern observed in this study is that multi drug resistant commensal E. Coli strains may constitute a potential reservoir of resistance genes that could be transferred to pathogenic bacteria.

CHAPTER ONE

INTRODUCTION

The usage of antibiotics is the most essential factors that promotes the emergence, selection and dissemination of antibiotic- resistance microorganisms in both veterinary and human medicine (Daniles et al, 2009). This acquired resistance not only in pathogenic bacteria but also in the endogenous flora of exposed individuals (animals and humans).

Also, intensively reared food animals, antibiotic may be administered to whole flocks rather than individual animals, and antimicrobial agent may be continuously fed to food animals. Such as poultry, goats and cattle as growth promoters.

Furthermore, the antibiotic selection pressure for bacteria drug resistance in animal is high and invariably their faecal flora contains a relatively high proportion of resistant bacteria (Whitworth et al, 2008, Literak et al, 2010).

The mechanisms for spreading antibiotic resistance from animal to human and vice versa remains controversial. Coli from chicken has been shown in human volunteers and there is historical evidence that animals are a reservoir for Escherichia coli found in humans (Akwar et al, 2008). Fang et al, 2008 reported that the spread of antibiotic resistance plasmids in E. coli from chickens to human handles or of antibiotic microorganisms from animal to humans in various countries has

been reported.

Resistance has been found in organisms common to both humans and animals such as *Escherichia coli*, *Salmonella* spp., *Campylobacter* spp. and *Enterococcs* among others (Davis et al, 2009). Due to the intricate balance of micro flora of different habitats within the ecosystem, the transfer of the resistance genes among bacteria occupying different habitats has the potential to occur frequently. (Call et al., 2008)

Escherichia coli is a gram negative, rod shape bacterium that is commonly found in the lower intestine of poikilothermic (warmblooded) organisms (endotherms).

Most *Escherichia coli* strains are harmless, but some serotype can cause serious food poisoning in humans and are occasionally responsible for product recalls due to food contamination (Migular et al., 2007).

Also the harmless strains are part of the normal floral of the gut and can benefit their host [by producing vitamin k2 and by preventing the establishment of the pathogenic bacteria within the intestine (Michael et al., 2002)

Escherichia coli and related bacteria composed of about 0.1% of the gut flora and fecal oral transmission is the major route through which pathogenic strains of the bacterium cause diseases (Okoli et al., 2005).

Cells are able to survive outside the body for a limited amount of time which makes them ideal indicator organisms to test environmental sample for fecal contamination.

However, a growing body of research that has examined environmental persistence of *Escherichia coli* which can survive for extended period of time outside the host (Lee et al., 1996) Furthermore, the bacterium can also be grown easily and inexpensively in a laboratory setting and has been extensively investigated for over 60 years. *Escherichia coli* is the most widely studied and an important species in the field of biotechnology and microbiology as well, where it has served as the host organism for the majority of work with recombinant DNA (Davis et al., 2008).

Conclusively, this was done to ascertain the significance of antibiotics resistance usage in microorganism and human medicines and also to know the mechanisms for spreading antibiotic resistance of *Escherichia coli* in animals and vice versa which remain controversial.

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