

## Multiple drug resistance of *Aeromonas hydrophila* isolates from Chicken samples collected from Mhow and Indore city of Madhyapradesh

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### Abstract

Fourteen antibacterial agents belonging to 9 different groups of antibiotics viz. aminoglycosides, cephalosporins, nitrofurantoin, fluroquinolones, chloramphenicol, sulphonamides, tetracyclines, penicillin and polymixin were used for *in vitro* sensitivity testing of *Aeromonas hydrophila* isolated from fifteen samples of chicken collected from retail shops in Mhow city. The sensitivity (100%) was attributed to ciprofloxacin, cefuroxime, ceftriaxone, cephotaxime, chloramphenicol, gentamycin, kanamycin, nitrofurantoin, nalidixic acid and ofloxacin followed by oxytetracycline (50%). All the isolates were resistant to ampicillin and colistin antibiotics. That means, none of the isolates were found to be sensitive for penicillin and polymixin group of antibiotics. Multiple drug resistance was also observed in all *A. hydrophila* isolates. Out of total isolates, 100% were resistant to two antimicrobial drugs and 50% to three drugs.

**Keywords:** Drug, Chicken, Resistance, Isolates, Antibiotic, Bacteria

### Introduction

The antimicrobial agents are of great value for devising curative measures against bacterial infections. Progressively increasing resistance to these agents is thus a serious cause of concern and periodic monitoring of drug resistance of these organisms should be carried out in different geographical areas so that appropriate agent can be chosen for empiric therapy.

*Aeromonads* have emerged as important food-borne pathogen world wide (Merino *et al.*, 1995). These organisms have been readily isolated from a wide variety of foods like fish, eggs, meat, meat products, milk and milk products (Agarwal, 1997; Melas *et al.*, 1999; Arora, 2004; Kumar *et al.*, 2005; Nawaz *et al.*, 2006). Mounting concerns for emergence of drug-resistance among aeromonads are reflected in a number of reports viz. Zheng *et al.* (1999); Chandrakanthi *et al.* (2000); Vivekanandhan *et al.* (2002); Yucel and Ctak (2003) and Emekdas *et al.* (2006). The problems of multi-drug resistant aeromonads are more intricate in developing nations like India and other South East Asian countries.

### Materials and Methods

In this study, a total of 15 samples of chicken were collected from retail shops located in Mhow and

Indore for the isolation of *Aeromonas hydrophila*. The samples were collected as per the procedure recommended by International Commission on Microbiological Specification for Food (ICMSF, 1978). Fourteen antibacterial agents belonging to 9 different groups of antibiotics viz. aminoglycosides, cephalosporins, nitrofurantoin, fluroquinolones, chloramphenicol, sulphonamides, tetracyclines, penicillin and polymixin were used for *in vitro* antibacterial sensitivity testing of two *Aeromonas hydrophila* isolates from chicken, using the disc diffusion assay (Bauer, 1966).

### Results and Discussion

High percentage of antimicrobial resistance and emergence of multiple drug resistance among the *A. hydrophila* strains was observed. The sensitivity (100%) was attributed to ciprofloxacin, cefuroxime, ceftriaxone, cephotaxime, chloramphenicol, gentamycin, kanamycin, nitrofurantoin, nalidixic acid and ofloxacin followed by oxytetracycline (50%). All the isolates were resistant to ampicillin and colistin antibiotics. That means, none of the isolates were found to be sensitive for penicillin and polymixin group of antibiotics. Multiple drug resistance was also observed in all *A. hydrophila* isolates. Out of total isolates, 100% were resistant to two antimicrobial drugs and 50% to three drugs.

The present results are in concurrence with the

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reports of Motyl *et al.* (1985), Soliman (1999), Chandrakanthi *et al.* (2000), Yucel and Ctak (2003) and Emekdas *et al.* (2006) who reported that cephalosporins like cephotaxime, aminoglycosides, chloramphenicol, tetracycline, nitrofurantoin inhibited most of the *A. hydrophila* strains and that all the strains were resistant to penicillin and colistin. In the present study, all the isolates of *A. hydrophila* exhibited multiple drug resistance as also reflected in the reports of Zheng *et al.* (1999) and Vivekanandhan *et al.* (2002).

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