Presence of Escherichia coli strains producing

extended spectrum β- lactamases (ESBL) in raw meat.

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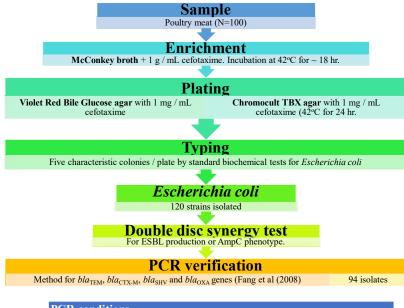
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Introduction

- Antimicrobial resistance is currently a serious concern for scientists and policy makers.
- · Of interest is the observed resistance of Enterobacteriaceae to cephalosporins and monobactams
- The broad-spectrum β-lactamases (ESBLs) are hydrolytic enzymes produced among others by Enterobacteriaceae, that confer resistance to penicillins, cephalosporins; and aztreonam.
- ESBL-producing organisms are of clinical significance since they are associated with severe infections (bacteraemias, intra-abdominal infection, urinary tract infections, and respiratory tract infections).
- · ESBL Escherichia coli has been isolated from healthy productive animals or from food of animal origin.

Aim of this study

• To examine the presence of ESBL producing Escherichia coli strains in fresh broiler meat and the ESBL producing genes present.



	PCR conditions				
	Stage	T (°C)	Time (secs)		
	Initial denaturation	85	900		
30 cycles	Denaturation	94	30		
	Annealing	62	90		
	Extension	72	60		
	Final extension	72	600		

Table 1. Phenotypic characterization according to the

double disc synergy test

Double disc synergy test antibioticsCefoxitin30 mgCefopime20/10 mgCeftazidime / clavulanic acid30/10 mgCefotaxime30 mgCefotaxime / clavulanic acid30/10 mg

	Amplicon Primer sequence (5' to 3')	Size (bp)	
hla	CTT TAT CGG CCC TCA CTCAA		
bla _{SHV}	AGG TGC TCA TCA TGG GAA AG	237	
hla	CGC CGC ATA CAC TAT TCT CAG AAT GA		
bla _{TEM}	ACG CTC ACC GGC TCC AGA TTT AT	445	
bla	ATG TGC AGY ACC AGT AAR GTK ATG GC		
DIA CTX-M	TGG GTR AAR TAR GTS ACC AGA AYC AGC GG	GC GG 593	
bla _{OXA}	bla _{OXA} ACA CAA TAC ATA TCA ACT TCG C		

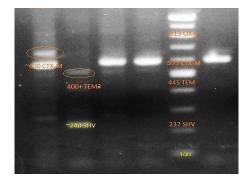


Table 2. Genetic profile of the selected isolates examined

			Isolates (n=86)
	Isolates (n=86)	bla _{CTX-M}	30 (<i>31.91%</i>)
True ESBL	86 (71.67%)	bla _{TEM}	8 (8.51%)
AmpC	22 (18.33%)	bla _{TEM} & bla _{CTX-M}	22 (<i>23.4%</i>)
Unknown etiology	10 (8.33%)	bla _{SHV}	0
		hla	Λ

Comparison of results with selected publications

Egervärn et al. (2014)	Imports to Sweden from EU (including Greece)	61% of the poultry tested positive for ESBL or AmpC strains
Tham et al. (2012)	Mediterranean countries	ESBL strains were not isolated in any of the food samplesNo selective enrichment used
Doi et al. (2010)	USA	78.12% of the broiler meat samples tested positive for ESBL or AmpC
Ahmed et al. (2009)	Japan	• bla _{TEM-1} : 17.3% • bla _{CMY-2} : 23.2%

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