

Survey on antibiotic usage for mastitis treatment in Spanish dairy cows



Cattle Production Free Communication
Session 38 Poster 41
Abstract 5474

Zorraquino M. A.¹, Berruga M. I.² & Molina M. P.³

¹ Departamento de Producción Agraria. Universidad Pública de Navarra, 31006 Pamplona, Spain

² Departamento de Ciencia y Tecnología Agroforestal y Genética. ETSIA-IDR. Universidad de Castilla-La Mancha, 02071 Albacete, Spain

³ Instituto de Ciencia y Tecnología Animal. Universidad Politécnica, 46071 Valencia, Spain
pmolina@dca.upv.es



Introduction

- Antibiotic residues in milk may lead to public health and technological problems
- The risk of milk contamination with antibiotics is mainly due to the treatment and prophylaxis of mastitis in dairy cows
- There is limited information about veterinary usage of antibiotics in different milk-production areas
- The selection of a screening test to control the presence of antibiotic residues in milk depends on which drugs are used in each country



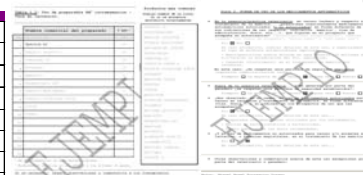
The aim of this study was to evaluate the use of antimicrobial drugs in dairy cows and the risk of raw milk contamination in Spain

Material & Methods

- Sales of veterinary drugs in Spain (Veterindustria, 2006)
- Veterinary survey 2006-07
 - Intramammary injectors (lactation and dry-off) & systemic treatments
 - Extra-label, off-label use, vets comments

Zone	Region	Injectors	Injectors	Systemic	Systemic
1	Galicia	11	1943	68772	364084
2	Asturias	11	1563	44073	94269
3	Cantabria	8	699	33703	90085
4	Navarra, PV, Rioja	8	843	67695	53431
5	Aragón	2	19	3800	8517
6	Cataluña	7	422	40800	81003
7	Castilla-León	4	565	27400	106162
8	Center zone	2	81	7250	42287
9	South - Levante	4	431	37250	95067
10	Islands	3	52	3500	17787
TOTAL		60	6618	334243	952692

* Veterinary services on Navarra and País Vasco consult farms from other Spanish regions

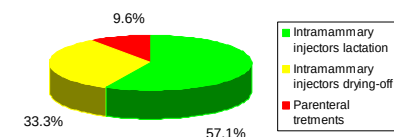


Relative risk factor of antibiotic presence in milk
Intramammary in lactation: 70%
Intramammary in dry-off: 20%
Systemic treatment: 10%

Results

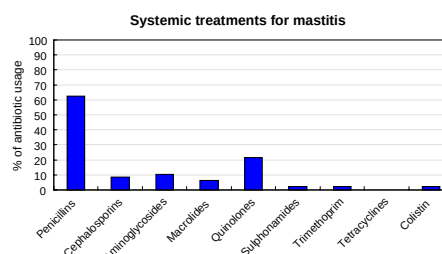
Antibiotic Sales (Veterindustria, 2006)

Total sales anti-mastitis drugs in Spain: 10,297,425 €



3,376,828 dose/gland
3.5 injectors/dose/cow/year
9,000-10,000 cows treated/day

Systemic Treatments



Antimicrobials used in systemic treatment

Key	Antimicrobial	%
PEG, PEN	Penicillin & Penethamate	43.1
ENR	Enrofloxacin	17.3
AMX	Amoxicillin	12.1
CQN	Ceftiofur	7.7
CLV	Clavulanic acid	7.3
GEN	Gentamicin	5.8
ESP	Spiramycin	4.4
DHS	DH-streptomycin	3.4
COL	Colistin	2.4
MBF	Marbofloxacin	2.4
TMT	Trimethoprim	2.3
ERI	Erythromycin	2.2
DNX	Danofloxacin	1.7
STX	Sulphadimetoxine	1.1
CTF	Ceftiofur	1.0
SDX	Sulphadoxine	0.8
TIL	Tylosin	0.7
SDD	Sulphadimidine	0.3
NEO	Neomycin	0.2
OXT	Oxitepracycline	0.1
KAN	Kanamycin	0.02
AMP	Ampicillin	0.02
CFX	Cephalexin	0.01

Vets' comments:

- Use of a vast diversity of active compounds
- Increase in the use of quinolones

Extra-label use

- When antibiotics used are authorized the withdrawal periods are generally observed (85%)
- 40% of vets employ extra-label use
- Farmers employ off-label use:

80% authorized drugs

30% non-authorized drugs

Changes in recommended doses
Duration of treatments (long/short)
Changes in administration routes
Combination of intramammary and systemic treatments

Drugs for different species
Drugs for non-lactating animals

Conclusions

- The sales of antibiotics for mastitis in cows exceeded € 10 millions, of which injectors for lactating cows was more than half (57%), for dry-off (33%) and systemic (10%)
- In general, betalactams are the most frequently used antibiotics (61%) to treat mastitis in dairy cows, followed by aminoglycosides (27%) among intramammary injectors and quinolones (20%) among systemic treatments
- Penicillin-penethamate and neomycin-framycetin are the most widely used active compounds
- Calculated relative risk of antibiotic presence in milk are: 61% betalactams, 27% aminoglycosides and < 3% macrolides, quinolones, sulfonamides and tetracyclines

Acknowledgements

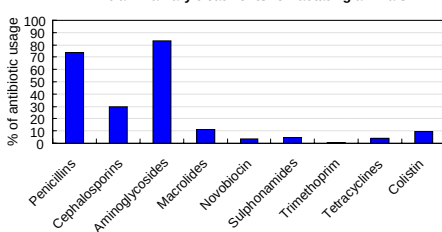
This study was supported by the Spanish Ministry of the Environment and Rural and Marine Affairs (nº 51.07)

Veterinary Survey (2006-07)

Intramammary Injectors

LACTATION PERIOD

Intramammary treatments for lactating animals



Antimicrobials used in lactating animals

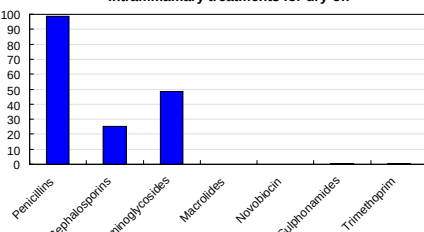
Key	Antimicrobial	%
NEO, FMT	Neomycin, Framycetin	39.7
PEG, PEN	Penicillin & Penethamate	29.4
DHS	DH-streptomycin	24.5
KAN	Kanamycin	14.8
AMX	Amoxicillin	14.2
CLV	Clavulanic acid	13.4
CFX	Cephalexin	11.1
CQN	Ceftiofur	9.4
CLT	Colistin	9.3
AMP	Ampicillin	8.0
CPZ	Cefoperazone	7.1
LCM	Lincomycin	6.1
DLX	Dicloxacillin	4.6
GEN	Gentamicin	4.5
ERI	Erythromycin	4.3
SXP	Sulphamethoxipridazine	4.3
CLX	Cloxacillin	4.0
TET	Tetracycline	4.0
NVB	Novobiocin	3.5
CFC	Cephacetrile	2.1
PIR	Pirlimicin	1.1
SDD	Sulphadimidine	0.3
TMT	Trimethoprim	0.3
CZL	Cephazolin	0.2

Vets' comments:

- Elevated amount of intramammary injectors
- Intramammary injectors usually are combined with systemic treatment
- Reduction of intramammary treatments because of an increase in the control of inhibitors in milk
- Vets carry out extra-label use for mastitis therapy

DRY PERIOD

Intramammary treatments for dry-off



Antimicrobials used in dry-off

Key	Antimicrobial	%
PEG, PEN	Penicillin & Penethamate	62.4
CLX	Cloxacillin	32.6
NEO, FMT	Neomycin & Framycetin	27.1
CFL	Cephalexin	18.2
AMP	Ampicillin	3.0
CQN	Ceftiofur	2.4
CPR	Cephapirin	2.3
CFX	Cephalexin	2.3
NAF	Nafcillin	0.7
DHS	DH-streptomycin	0.7
SDD	Sulphadimidine	0.3
TMT	Trimethoprim	0.3
ERI	Erythromycin	0.2
NVB	Novobiocin	0.2

Vets' comments:

- Intramammary injectors usually combined systemic treatments with erythromycin, enrofloxacin or amoxicillin