



***Klebsiella* sp. & Fluoroquinolone Resistance: Prevalence & Yearly Trend**

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I. Prevalence in the environmental gram-negative isolates:

A. Table

Year	All Gram-neg Isolates	All Klebsiella Isolates	% Klebsiella
2004	5	2	40
2005	10	0	0
2006	25	0	0
2007	13	1	8
2008	71	13	18
2009	121	13	11
2010	90	17	19
2011	74	9	12
2012	95	2	2
2013	179	25	13
2014	76	25	33
TOTAL	759	107	

B. Statistics (Because of the zeros in too many categories, the test was run for 2007 to 2014)

1. Chi-square test for independence

$$X^2 = 36.75$$

$$df = 10$$

$$p = <0.001$$

2. Chi-square test for trend

2007-2014

$$X^2 = 2.28$$

$$df = 1$$

$$p = 0.13$$

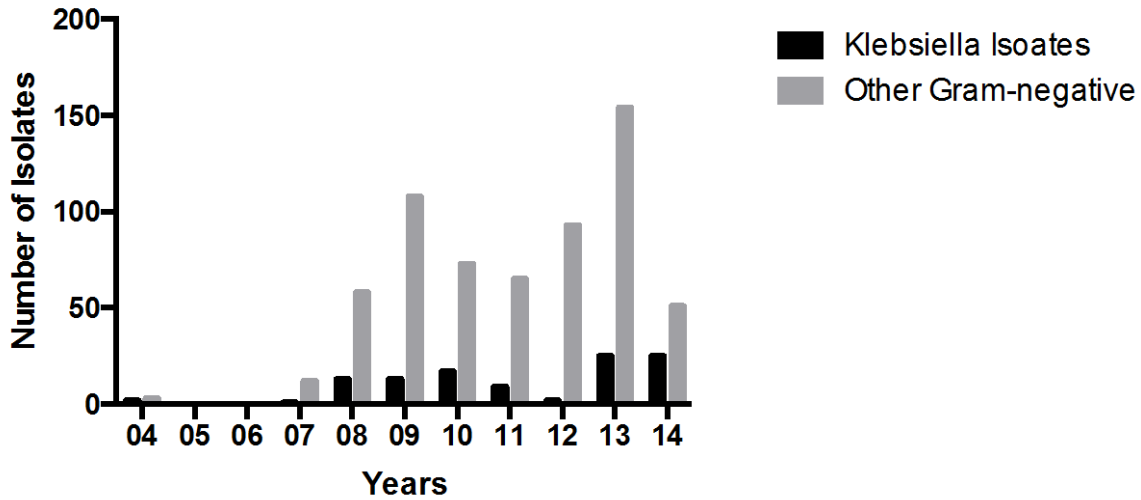
3. There is a very strong association between the rows (years) and the column (isolates), but no significant trend.

C. Unlike other papers describing *Klebsiella* sp. in pinnipeds, we have the identification down to species level:

K. pneumoniae -- 97 isolates

K. oxytoca -- 8 isolates

K. scleromatis -- 2 isolates



II. Fluoroquinolone Resistance

A. Two quinolones were tested: ciprofloxacin and enrofloxacin. A designation of either “resistant” or “intermediate” was recorded as “non-susceptible.”

B. Table

Year	Susceptible	Non-susceptible	% Non-susceptible
2004	Not tested (2 isolates)	Not tested	N/A
2005	0	0	0
2006	0	0	0
2007	1	0	0
2008	13	0	0
2009	12	1	8
2010	16	1	6
2011	3	6	50
2012	0	2	100
2013	22	3	3
2014	16	9	36
TOTAL	83	22	

C. Statistics: (years 2007 – 2014)

1. Chi-square test for independence:

$$X^2 = 30.95$$

$$df = 7$$

$$p = <0.0001$$

2. Chi-square test for trend:

$$X^2 = 6.45$$

$$df = 1$$

$$p = 0.011$$

3. There is a significant association between the years and the susceptibility pattern. There is also a significant trend toward increasing rates of non-susceptibility.

D. Concerning the two other *Klebsiella* species, 7 of the 10 isolates were non-susceptible (70%)!

