

THE IN-VITRO ACTIVITY OF SITAFLOXACIN AGAINST THE MOST COMMON BACTERIAL PATHOGENS ISOLATED FROM THE CLINICAL SAMPLES

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BACKGROUND

Sitafloracin exhibited a broad antibacterial spectrum and excellent antimicrobial activity against common bacterial pathogens causing different infections. Sitafloracin has also exhibited excellent clinical efficacy in patients who had failed to respond to other antibacterial therapy. However, sitafloracin has not been available in Vietnam yet, so that the local information of the in-vitro spectrum of this antibiotic to the most common bacterial pathogens isolated from Vietnam

AIMS

Using the microdilution method to determine ratio of sensitivity and the MIC₉₀ of Sitafloracin and other common used antibiotics against the most common bacterial pathogens isolated from the clinical samples collected from patients with acute lower respiratory tract infections and with acute urinary tract infections

From 1/2015 to 12/2015, 682 isolates were collected from 4 hospitals in Ho Chi Minh and 1 hospital in Ha Noi including 457 isolates from lower respiratory tract infection and 225 isolates from urinary tract. The in-vitro activity of sitafloracin to the most common Gram [-] rod were demonstrated in the tables 1 and 2 bellows:

Table 1: The ratio of sensitivity together with the MIC₉₀, MIC₅₀ of the antibiotics on the studied strains of *A. baumannii*, *P. aeruginosa* and *Proteus spp.*

Antibiotics	<i>A. baumannii</i> (N=84)			<i>P. aeruginosa</i> (N=88)			<i>Proteus spp.</i> (N=28)		
	MIC ₉₀	MIC ₅₀	% S	MIC ₉₀	MIC ₅₀	% S	MIC ₉₀	MIC ₅₀	% S
STFX	2	1	97.6	4	0.12	80.7	8	0.25	82.1
LVFX	64	16	25.0	64	1	62.5	64	8	35.7
CPFX	>64	>64	17.9	32	0.5	61.4	64	4	32.1
MFLX	>16	8	25.0	>16	2	40.9	>16	16	10.7
TFLX	>16	>16	21.4	>16	0.5	62.5	>16	>16	14.3
ST	>152	152	46.4	>152	>152	3.4	>152	>152	14.3
CTX	>128	>128	23.8	>128	16	1.1	128	0.03	71.4
CTRX	>128	>128	10.7	>128	32	1.1	128	0.03	71.4
CFDN	>64	>64	8.3	>64	>64	0.0	>64	0.03	64.3
MEPN	64	32	21.5	64	1	68.2	>128	0.03	82.1
TAZ/PIPC	>128	>128	27.4	128	8	71.6	>128	0.25	82.1
ACV	>64	>64	25.0	>64	>64	1.1	>64	2	85.7

STFX: Sitafloracin; **LVFX:** Levofloxacin; **CPFX:** Ciprofloxacin; **MFLX:** Moxifloxacin, **TFLX1:** Tosufloxacin; **ST:** Sulfamethoxazole/Trimethoprim with MIC was of sulfamethoxazole, trimethoprim's concentration was 1/19 that of sulfamethoxazol; **CTX:** Cefotaxim; **CTXR:** Ceftriaxone; **CFDN:** Cefdinir; **MEPN:** Meropenem; **TAZ/PIPC:** Tazobactam/piperacillin with MIC was of piperacillin in which the concentration of Tazobactam was unchanged at 4µg/ml; **ACV:** Amoxicillin/clavulanic acid with MIC was of amoxicillin, concentration of clavulanic was 1/2 that of amoxicillin.

Table 2: The ratio of sensitivity together with the MIC₉₀, MIC₅₀ of the antibiotics on the studied strains of *E. coli* (ESBL+/ESBL-); and *K. pneumoniae* (ESBL+/ESBL-).

Antibiotics	<i>E. coli</i> ESBL+ (N=41)			<i>E. coli</i> ESBL- (N=29)			<i>Klp</i> ESBL+ (N=32)			<i>Klp</i> ESBL- (N=73)		
	MIC ₉₀	MIC ₅₀	% S	MIC ₉₀	MIC ₅₀	% S	MIC ₉₀	MIC ₅₀	% S	MIC ₉₀	MIC ₅₀	% S
STFX	2	0.5	95.1	2	0.06	96.6	>8	8	46.9	8	0.12	80.8
LVFX	16	8	19.5	16	0.5	51.7	>64	32	15.6	64	0.5	65.8
CPFX	>64	16	14.6	64	0.25	55.2	>64	64	12.5	>64	0.5	61.6
MFLX	16	8	14.6	>16	1	51.7	>16	>16	3.1	>16	1	56.2
TFLX	>16	>16	14.6	>16	0.5	51.7	>16	>16	9.4	>16	0.5	60.3
ST	>152	>152	12.2	>152	>152	41.4	>152	>152	15.6	>152	>152	41.1
CTX	>128	32	0.0	>128	0.03	79.3	>128	>128	0.0	64	0.12	64.4
CTRX	>128	128	0.0	>128	0.03	79.3	>128	>128	3.1	>128	0.12	69.9
CFDN	128	128	0.0	>64	0.25	72.4	128	128	0.0	>64	2	49.3
MEPN	<0.06	<0.06	100.0	<0.06	<0.06	93.2	8	0.12	59.4	0.06	0.03	93.2
TAZ/PIPC	4	1	97.6	16	1	89.7	>128	>128	25.0	128	2	83.6
ACV	16	8	90.2	32	4	82.8	>64	64	15.6	64	16	63.0

KLP: *K. pneumoniae*; **STFX:** Sitafloracin; **LVFX:** Levofloxacin; **CPFX:** Ciprofloxacin; **MFLX:** Moxifloxacin, **TFLX:** Tosufloxacin; **ST:** Sulfamethoxazole/Trimethoprim with MIC was of sulfamethoxazole, trimethoprim's concentration was 1/19 that of sulfamethoxazol; **CTX:** Cefotaxim; **CTXR:** Ceftriaxone; **CFDN:** Cefdinir; **MEPN:** Meropenem; **TAZ/PIPC:** Tazobactam/piperacillin with MIC was of piperacillin in which the concentration of Tazobactam was unchanged at 4µg/ml; **ACV:** Amoxicillin/clavulanic acid with MIC is concentration was of amoxicillin, concentration of clavulanic was 1/2 that of amoxicillin.

Against the most common community bacterial pathogens the received results demonstrated that 100% of *H. influenzae* were sensitive to sitafloracin, equivalent to amoxicillin/clavulanic acid, cefotaxime, ceftriaxone, and imipenem, however sitafloracin gave the very low MIC₉₀, only 0.12µg/ml, the lowest versus other antibiotics. Against *S. pneumoniae*, 100% of the isolates were sensitive to sitafloracin and the MIC₉₀ was 0.06µg/ml, the lowest versus other antibiotics. Sitafloracin was among the antibiotics with very high sensitivity ratio to *M. catarrhalis* (96.2%) and gave the lowest MIC₉₀

CONCLUSION

This is the first trial to find-out the in-vitro activity of Sitafloracin against the different bacterial pathogens isolated from clinical samples in Viet Nam. The results collected from the study demonstrated that Sitafloracin exhibited excellent in-vitro antibacterial activity against both Gram-positive and Gram-negative bacteria that are mostly encountered in the clinical fields of infections. This result can confirm that Sitafloracin can be considered as one of the most powerful antibiotics that doctor can use to treat various infections caused by antibiotic resistant bacterial pathogens.