

**Table 45.2.** Antimicrobial activity of daptomycin against Gram-positive anaerobic bacteria, *Corynebacteria*, and unusual Gram-positive bacteria.

Species (no. of isolates)	MIC <sub>50</sub> (mg/l)	MIC <sub>90</sub> (mg/l)	MIC range (mg/l)	EUCAST breakpoint ≤ MIC value (mg/l)	ECOFF (mg/l)	Reference
<b>Anaerobic Gram-positive bacteria</b>						
<i>Clostridium</i> spp., n = 20	1	4	0.25–16			Goldstein et al. (2006)
<i>Clostridium difficile</i> , n = 18, 102, 205	0.5, 0.5, 1	1, 1, 2	0.125–1, 0.125–2, 0.032–4	Not determined	4	Goldstein et al. (2003); Tyrrell et al. (2006), Norén et al. (2010)
<i>Clostridium perfringens</i> , n = 11, 101, 15	0.5, 0.5, 2	0.5, 2, 2	0.06–0.5, 0.06–8 <sup>a</sup> , 1–2			Goldstein et al. (2003); Tyrrell et al. (2006); Tyrrell et al. (2012)
<i>Peptoniphilus asaccharolyticus</i> , n = 20	≤ 0.03	0.25	≤ 0.03–1	Not determined		Goldstein et al. (2006)
<i>Fingoldia magna</i> , n = 29, 101	0.5, 0.5	1, 1	0.125–2, ≤ 0.015–2			Goldstein et al. (2006)
<i>Anaerococcus prevotii</i> , n = 20	0.125	0.125	≤ 0.03–1			Goldstein et al. (2006)
<i>Peptostreptococcus anaerobius</i> , n = 10	0.25	0.5	0.25–4			Goldstein et al. (2004)
<i>Propionibacterium acnes</i> , n = 15, 117	0.5, 0.5	2, 1	0.125–2, 0.25–1			Goldstein et al. (2003); Tyrrell et al. (2006)
Other Gram positive-anaerobic cocci, n = 31, 48	0.25, 0.125	1, 0.5	≤ 0.03–1, ≤ 0.03–1	Not determined		Goldstein et al. (2006); Tyrrell et al. (2012)
<b>Corynebacteria</b>						
<i>Corynebacterium</i> spp., n = 20, 18	0.125, ≤ 0.06	0.5, 0.12	≤ 0.06–0.5, ≤ 0.06–0.25			Goldstein et al. (2006); Sader et al. (2013)
<i>Corynebacterium jeikeium</i> , n = 10, 25	0.25, 0.25	0.25, 0.25	0.125–0.5, 0.06–0.5	Not determined		Goldstein et al. (2003); Navas et al. (2012)
<b>Unusual Gram-positive bacteria</b>						
<i>Listeria monocytogenes</i> , n = 31, 39	4, 2	4, 4	0.5–8, 0.5–4	Not determined	4	Huang et al. (2007); Sader et al. (2013)
<i>Pediococcus</i> spp., n = 13	0.25	0.5	0.06–0.5			Huang et al. (2007)
<i>Micrococcus</i> spp, n = 26	≤ 0.06	0.25	≤ 0.06–0.25	Not determined		Sader et al. (2013)
<i>Leuconostoc</i> , n = 68	0.12	0.25	0.06–2			Huang et al. (2007)
<i>Lactobacillus</i> spp, n = 24	2	4	0.25–> 32	Not determined		Tyrrell et al. (2012)

<sup>a</sup>Single isolate at > 2 mg/ml.

Abbreviations: MIC: minimum inhibitory concentration; EUCAST: European Committee on Antimicrobial Susceptibility Testing; ECOFF: epidemiological cut-off.

is still four times more potent than daptomycin against beta-hemolytic and viridans streptococci (Castanheira et al., 2008). In one study, 99.9% of 915 bloodstream isolates of viridans streptococci and *S. bovis* (approximately 100 strains per species) had an MIC<sub>90</sub> of 1 or lower, with *S. bovis* having the lowest MIC<sub>90</sub> (0.06 mg/l) (Streit et al., 2005).

In the USA and Canada, daptomycin was highly active against *Enterococcus faecalis* (99.9% susceptible at ≤ 4 mg/l). Ampicillin (MIC<sub>90</sub> 2 mg/l) and linezolid (MIC<sub>90</sub> 2 mg/l) were equally active (Pfaller et al., 2007). In the European SENTRY surveillance program, the highest daptomycin MIC value against *E. faecalis* was 2 mg/l, whereas among *E. faecium* the highest MIC value was 4 mg/l (Sader et al., 2007). In the Asia-Pacific region surveillance study, all tested isolates of

*E. faecalis* (MIC<sub>90</sub> 2 mg/l) were susceptible to daptomycin, whereas 0.4% were resistant to vancomycin. Ten percent of the *E. faecium* isolates were resistant to daptomycin (MIC 8 mg/l) (Biedenbach et al., 2007).

#### ANAEROBIC GRAM-POSITIVE BACTERIA

Daptomycin has *in vitro* activity against several anaerobic Gram-positive pathogens, including *Clostridium perfringens*, *C. difficile*, *Fingoldia magna*, *Peptoniphilus asaccharolyticus*, and *Anaerococcus prevotii* (Table 45.2).

Table 45.2 shows the susceptibility of frequently isolated Gram-positive anaerobes from recent studies. Goldstein et al. (2006) studied the susceptibility of 120 anaerobic isolates from consecutive patients with diabetic foot infections who