



Letter to the Editor

The Italian *Hafnia alvei* strain LMG 27376 is *Hafnia paralvei*

Dear Editor,

In agreement with Padilla's paper published a few months ago on Veterinary Microbiology (Padilla et al., 2013), we are concisely reporting our experience with the *Hafnia paralvei* strain LMG 27376 (characterized in 2008 as *Hafnia alvei*) (Savini et al., 2008), and want to emphasize that a wider number of well identified *H. paralvei* isolates are to be investigated to understand pathogenicity and epidemiology of this species.

The genus *Hafnia* belongs to the family Enterobacteriaceae, and an increasing consciousness of the possible role hafniae may play in human and animal diseases has emerged in the recent years (Abbott et al., 2011). Particularly, some papers even suggested that such organisms are candidate enteric pathogens, although much more evidence is required in this area (Abbott et al., 2011; Osuka et al., 2011).

In 2008, we described a *H. alvei* isolate from stools of an asymptomatic human patient (Savini et al., 2008) and deposited the strain into the BCCM/LMG Bacteria Collection (Ghent University, Gent, Belgium) under the accession number LMG 27376. In 2010, however, revision of *Hafnia* taxonomy has led to introduction of the novel species

Table 1

Strain LMG 27376 MICs and changed interpretation of some according to EUCAST 2012 (colistin activity is discussed both in text and Fig. 1, although not studied in Savini et al., 2008).

LMG 27376	MIC	NCCLS 2003	EUCAST 2012
Cefoxitin	16	I	→ R ^a
Ampicillin	64	R	
Piperacillin	16	S	→ Non-susceptible
Amoxicillin/clavulanate	32	R	
Ampicillin/sulbactam	32	R	
Piperacillin/tazobactam	16	S	→ Non-susceptible
Cefotaxime	2	S	→ Non-susceptible
Ceftazidime	4	S	→ Non-susceptible
Cefepime	1	S	
Imipenem	0.25	S	
Meropenem	0.25	S	
Amikacin	2	S	
Ciprofloxacin	≤0.03	S	
Cotrimoxazole	0.5/9.5	S	
Tetracycline	8	I	→ Undetermined

^a EUCAST 2012 does not provide cefoxitin MIC breakpoints; resistance has been documented by agar disc test (14 mm inhibition zone diameter).

H. paralvei (Huys et al., 2010). Accordingly, LMG 27376 was recently analyzed with (GTG)₅-PCR (Huys et al., 2010) that showed it belongs to the *H. paralvei* species.

Currently, little is still known about frequency, pathogenicity and drug resistance of *H. paralvei* (Abbott et al., 2011; Osuka et al., 2011; Padilla et al., 2013). Collection of strain LMG 27376 from a non-enteritis patient suggested the species may inhabit the enteric tract as an innocent bystander. Also, we wanted to reconsider the strain MICs (minimum inhibitory concentrations) obtained in 2008 (based on NCCLS 2003 guidelines) according to the more recent EUCAST 2012 criteria for Enterobacteriaceae. As a result, cefoxitin activity (previously interpreted as intermediate) was observed to be in the resistance range, while those of piperacillin, piperacillin/tazobactam, cefotaxime and ceftazidime (to which the organism was previously considered to be susceptible) were documented to fall in the non-susceptible category (Table 1). Such results are in agreement with preliminary data suggesting an enhanced propensity of *H. paralvei* to exert β-lactam resistance (if compared to *H. alvei*) (Abbott et al., 2011); nevertheless, the elevated MICs we found could be strain-specific, and an exceedingly higher number of isolates have to be investigated to provide confirmation of this species poor response to β-lactams.

Again, it is required that MICs from automated systems find reliable confirmation. In this context, we had agreement between Vitek2 (bioMérieux, Marcy l'Etoile, France) value for colistin (8 mg/mL) and that obtained with MIC Test Strips (Liofilchem[®], Roseto degli Abruzzi, Italy), that is >3 mg/mL (both falling in the resistance range) (Fig. 1). Finally, we would like to suggest that previously identified *H. alvei* strains from humans and animals be

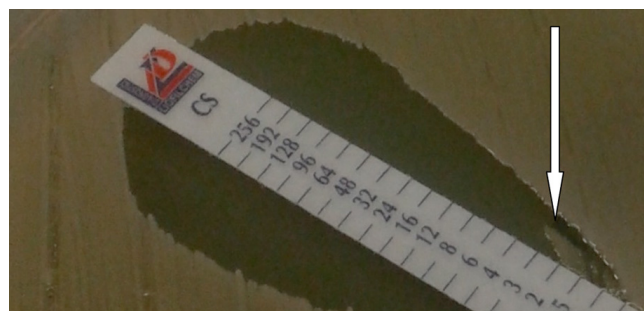


Fig. 1. Strain LMG 27376 growth (arrow) into the colistin susceptibility zone (as described by Abbott et al., 2011), indicating a >3 mg/mL MIC (resistance).

reconsidered in the light of the recent taxonomic revision and molecular tools and, with the aim to understand strains' behaviour under drug exposure, we recommend that MIC interpretation be revised from time to time according to the changing interpretive criteria.

H. paralvei LMG 27376 is lactose-non-fermenting, and shows a *Salmonella*-like phenotype; then, it is indistinguishable from any non-fermenting *H. alvei* strain; although it is the first isolate from Italy, we trust that as soon as molecular diagnostics is made more and more available in microbiology services, an increasing number of isolates will be reported, allowing to depict salient features of this recently described species.

Conflict of interests

None.

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