

OBJECTIVES

Our laboratory is the Belgian Reference Centre for Enterococci. In the framework of these activities, the applicability of the microflex LT MALDI-TOF MS Biotyper (Bruker) was evaluated for the identification of *Enterococcus species*. Since for some *Enterococcus species* only 3 or less spectra were available in the MALDI Biotyper database version 3995, a large set of strains was investigated.

MATERIALS & METHODS

For the validation of the MALDI Biotyper, 136 enterococcal strains (76 reference strains (Table 1) and 60 clinical isolates identified by in-house validated ddl-PCR and species-specific PCR) were tested. The collection consisted of *E. faecalis* (n=20), *E. faecium* (n=21), *E. gallinarum* (n=20), *E. raffinosus* (n=2), *E. casseliflavus* (n=20), *E. avium* (n=12), *E. hirae* (n=21) and *E. durans* (n=20). Identification was done according to the instructions of the manufacturer using an overnight culture. A log-score >2 was used as cut-off. To solve discrepant identification results, 16S rDNA PCR and sequencing were applied.

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RESULTS

- Using the above mentioned cut-off, for 20/20 *E. faecalis* strains, 21/22 *E. faecium* strains, 1/2 *E. raffinosus* strains, 19/20 *E. gallinarum* strains, 20/20 *E. casseliflavus* strains, 19/20 *E. durans* strains, 20/21 *E. hirae* strains, 8/12 *E. avium* strains, concordant results were obtained between the MALDI Biotyper identification and the previous identification.
- In addition, the identification was confirmed for 1 *E. raffinosus*, 1 *E. gallinarum*, 1 *E. durans*, 2 *E. avium*, but with a log-score varying between 1.74 and 1.95.
- The following discrepant results were obtained: 1x *L. murinus* instead of *E. faecium*, 1x *E. faecium* instead of *E. hirae*, 2x *E. faecalis* instead of *E. avium*. 16S rDNA sequencing confirmed the MALDI Biotyper identification for 3/4 except for the *E. hirae* strain.

Table 1. Overview results with log-score <2 and discordant results

Species	Strain Nr	MS-ID	logscore	16S result
<i>E. faecium</i>	LMG17203	<i>L. murinus</i>	2,01	<i>L. murinus</i>
<i>E. avium</i>	16/5	<i>E. faecalis</i>	2,24	<i>E. faecalis</i>
<i>E. avium</i>	16/05	<i>E. faecalis</i>	2,10	<i>E. faecalis</i>
<i>E. hirae</i>	04SS05	<i>E. faecium</i>	2,47	<i>E. hirae</i>
<i>E. gallinarum</i>	004K	<i>E. gallinarum</i>	1,95	/
<i>E. raffinosus</i>	111-005886	<i>E. raffinosus</i>	1,93	/
<i>E. avium</i>	PT03-07	<i>E. avium</i>	1,84	/
<i>E. avium</i>	59097	<i>E. avium</i>	1,86	/
<i>E. durans</i>	LMG12285	<i>E. durans</i>	1,74	/

CONCLUSIONS

- The MALDI Biotyper is a fast, convenient and reliable method for the identification of *Enterococcus species*.

Table 1. Overview reference strains used

Species	Strain Nr	Species	Strain Nr
<i>E. faecalis</i>	LMG17123	<i>E. gallinarum</i>	LMG16283
<i>E. faecalis</i>	LMG17122	<i>E. gallinarum</i>	LMG16289
<i>E. faecalis</i>	LMG17121	<i>E. raffinosus</i>	LMG12888T
<i>E. faecalis</i>	LMG16303	<i>E. casseliflavus</i>	LMG12311
<i>E. faecalis</i>	LMG16302	<i>E. casseliflavus</i>	LMG12314
<i>E. faecalis</i>	LMG16301	<i>E. casseliflavus</i>	LMG120309
<i>E. faecalis</i>	ATCC29212	<i>E. casseliflavus</i>	LMG12901
<i>E. faecalis</i>	BM4539	<i>E. casseliflavus</i>	LMG12307
<i>E. faecalis</i>	BM4405	<i>E. casseliflavus</i>	LMG12310
<i>E. faecalis</i>	BM4518	<i>E. casseliflavus</i>	LMG12306
<i>E. faecium</i>	LMG15876	<i>E. casseliflavus</i>	CCUG13597
<i>E. faecium</i>	LMG16308	<i>E. casseliflavus</i>	LMG14406
<i>E. faecium</i>	CCUG31387	<i>E. casseliflavus</i>	LMG16277
<i>E. faecium</i>	CCUG32171	<i>E. casseliflavus</i>	LMG16282
<i>E. faecium</i>	CCUG32655	<i>E. casseliflavus</i>	LMG16284
<i>E. faecium</i>	CCUG34324	<i>E. casseliflavus</i>	LMG16285
<i>E. faecium</i>	CCUG45539	<i>E. casseliflavus</i>	LMG16286
<i>E. faecium</i>	CCUG29743	<i>E. casseliflavus</i>	LMG16287
<i>E. faecium</i>	CCUG36838	<i>E. casseliflavus</i>	LMG16288
<i>E. faecium</i>	LMG8148	<i>E. casseliflavus</i>	LMG938
<i>E. faecium</i>	LMG8149	<i>E. casseliflavus</i>	LMG12311
<i>E. faecium</i>	LMG17204	<i>E. casseliflavus</i>	LMG10745
<i>E. faecium</i>	LMG17200	<i>E. casseliflavus</i>	LMG12314
<i>E. faecium</i>	LMG147188	<i>E. avium</i>	LMG10744T
<i>E. faecium</i>	LMG17179	<i>E. hirae</i>	LMG14200
<i>E. faecium</i>	LMG17178	<i>E. hirae</i>	LMG14201
<i>E. faecium</i>	LMG17175	<i>E. hirae</i>	LMG14488
<i>E. faecium</i>	LMG17174	<i>E. hirae</i>	LMG6399T
<i>E. faecium</i>	BM4339	<i>E. hirae</i>	LMG11493
<i>E. gallinarum</i>	LMG12904	<i>E. hirae</i>	LMG11492
<i>E. gallinarum</i>	LMG12313	<i>E. hirae</i>	LMG14260
<i>E. gallinarum</i>	LMG13129	<i>E. hirae</i>	LMG14489
<i>E. gallinarum</i>	LMG14401	<i>E. durans</i>	LMG14763
<i>E. gallinarum</i>	LMG14405	<i>E. durans</i>	LMG10746T
<i>E. gallinarum</i>	LMG16197	<i>E. durans</i>	LMG14197
<i>E. gallinarum</i>	LMG16276	<i>E. durans</i>	LMG12903
		<i>E. durans</i>	LMG12283
		<i>E. durans</i>	LMG13064T2
		<i>E. durans</i>	LMG14202