Identification of Gram-Negative Bacteria Using the DiversiLab System

M. Lising, K. Reece, D. Walton, A. Shields, T. Bittner, R. Schrock, M. Healy

Bacterial Barcodes (Spectral Genomics, Inc.), Houston, TX, USA.

BACKGROUND

Members of the Enterobacteriaceae family are often implicated in foodborne infections as well as nosocomial infections resulting from the use of contaminated medical devices. Within this family, Shigella, S. flexneri and S. sonnei are most often implicated in foodborne diseases. Shigella is only one of a number of fecal coliform bacteria that are prevalent in a variety of warm-blooded animals and do not differentiate strains. Repetitive sequence-based PCR (rep-PCR) has been shown to be a reliable method capable of clearly distinguishing these two organisms. Within the S. flexneri group, serotype is a useful tool for distinguishing between different isolates. Although some of the Shigella isolates tested were not to be similar across serogroups on the dendrogram with a similarity coefficient greater than 95%, we are able to show some discrimination of these samples in the graph overlay. Identification of Shigella appears to be limited with this method, however, the DiversiLab Kit has been shown to be more discriminating for strain typing and identification. The Shigella group is 100% concordant with serotyping, however, it has not been able to distinguish the most diverse rep-PCR fingerprints as noted by the clustering of cultures among all other isolates.

METHOD

Following geno isolates were selected using the DiversiLab System (Figure 1). Isolates that were selected were chosen for their diversity. While other isolates in the Enterobacteriaceae family are rarely serogrouped for definitive identification, the ability to definitively identify these isolates is essential. The Enterobacteriaceae family is 100% concordant with serotyping, however, it has not been able to distinguish the most diverse rep-PCR fingerprints as noted by the clustering of cultures among all other isolates.

REFERENCES


Figure 1. Identification of Salmonella Enteritidis using the DiversiLab System. The DiversiLab overlay of two S. flexneri serotypes. Identification of Shigella appears to be limited with this method, however, the DiversiLab Kit has been shown to be more discriminating for strain typing and identification. The Shigella group is 100% concordant with serotyping, however, it has not been able to distinguish the most diverse rep-PCR fingerprints as noted by the clustering of cultures among all other isolates.