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Colibrì (TM) :comparison between automated and traditional MALDI-TOF targets preparation

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Background: Rapid identification by MALDI-TOF mass spectrometry was an important innovation in Microbiology, providing with a timely information about the microorganism causing infection. The new system Colibrí™ (COPAN ITALIA, Brescia, Italy) can prepare target for MALDI-TOF in an automatic way. The aim of our study was to compare the identification results obtained by both automated and traditional MALDI-TOF target preparation.

Material/methods: A total of 49 positive cultures with isolated colonies from clinical samples were analysed at the Microbiology Laboratory of Niguarda Hospital, Milan, Italy. The colonies from each plate were used to prepare target according to the routine procedure used in our Laboratory. Results were compared with those obtained on target prepared by Colibrí™ .This instrument is equipped with a pipetting system for the aspiration and manipulation of colonies grown on different kind of solid media (blood agar, Mac Conkey, Chocolate Agar, Chromogenic media). Colibrí™ is able to pick the colony and transfer it on the target. Microorganism identification was performed by Matrix Assisted Laser Desorption Ionization – Time of Flight (MALDI-TOF, Bruker Daltonics).

Results: The manual and automatic method were compared for 7 *Staphylococcus aureus*, 7 *Enterococcus* spp., 7 Coagulase Negative Staphylococci, 20 *Enterobacteriaceae* (10 *Escherichia coli,* 8 *Klebsiella pneumoniae*, 1 *Enterobacter* spp., 1 *Serratia marcescens*), 6 non-fermenting Gram-negative bacteria (3 *Acinetobacter baumannii* and 3 *Pseudomonas aeruginosa*) and 2 yeast (1 *Candida albicans* and 1 *C. parapsilosis*). An overall agreement of 91,8% (45/49) was reported when compared with the routine method. In particular, a 100% (28/28) agreement was obtained for Gram-negative bacteria and yeasts. An overall agreement of 81% (17/21) was obtained for Gram-positive bacteria. Three *S. epidemidis* (two “not reliable identification” and one “no peaks found”) and 1 *E.*

faecium (“not reliable identification”) were not identified on the Colibrí™’s target. These differences could be due to small size of the colonies on agar plates.

Conclusions: Colibrí™ is an innovative system that can lead to full automation of Microbiology Laboratories. Our results demonstrate good performance of Colibrí™ . This device can be connected to the Wasplab™ (COPAN ITALIA, Brescia, Italy) from which it shall receive all the instructions on the activities to be performed on each media plate with complete traceability of the sample. Moreover, Colibrí™ could reduce the hands-on time for the laboratory operator, maintaining the quality of work and improving the safety.