Copan Colibrí™, an innovative fully automated instrument for Clinical Microbiology Laboratory

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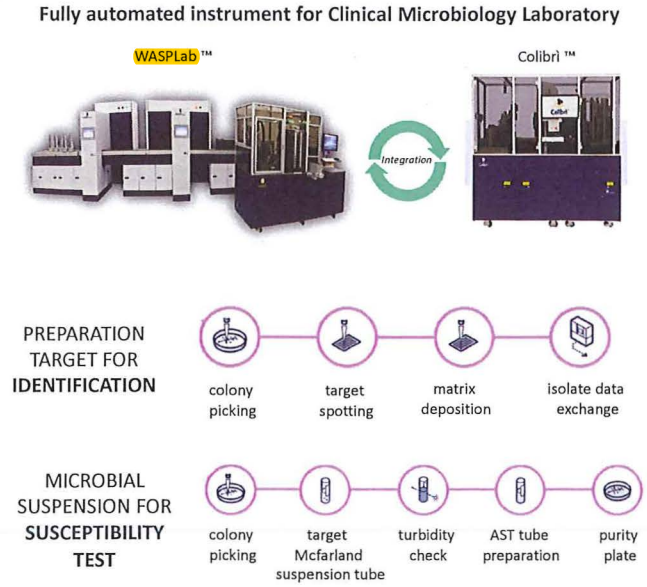
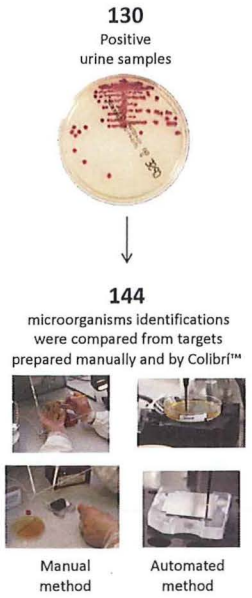
INTRODUCTION

Copan Colibrí™ is a brand-new, innovative instrument for the fully automated preparation of the MALDI-ToF target to bacterial identification, microbial suspensions for susceptibility tests and the seeding of purity Plates. The aim of this study was to validate the instrument for its introduction in the laboratory routine, comparing the microbial identification of MALDI-ToF targets prepared manually and by Colibrí™.

METHODS

A set of 130 urine samples that yielded positive results at the Microbiology Laboratory of Niguarda Hospital (Milan, Italy) were chosen for the study. One microliter of each sample was seeded on CPS® Elite (bioMérieux) by WASP® and plates incubated in WASPLab® at 35° C for 16h. Plates were digitalized and analyzed on WASPLab® working station and colonies were designed with the aid of WASPLab® Imaging Plug-In. Plates were then loaded on Colibrí equipped with a pipetting system able to pick the colony pre-selected by the operator, transferred it on the target, and then the spot was overlayed with the matrix without the use of formic acid. Microorganism identification was performed by MALDI Biotyper system (Bruker Daltonics) and results were compared to those obtained from targets prepared by manual methods.





58 GRAM POSITIVE bacteria:
- *44 Enterococcus spp.*
- *7 S.aureus*
- *6 Streptococcus spp.*
- *1 Aerococcus urinae*

87.9% AGREEMENT (51/58)

85 GRAM NEGATIVE bacteria:
- *31 Klebsiella spp*
- *21 Pseudomonas spp.*
- *14 P.mirabilis*
- *12 E.coli*
- *4 Enterobacter spp*
- *2 A.baumannii*
- *1 C.koserii*

98.8% AGREEMENT (84/85)

1 YEAST:
- *1 C.albicans*

100% AGREEMENT (1/1)

94.4% OVERALL AGREEMENT (136/144)

DISCORDANT RESULTS

n.	BACTERIA (8/144)
4	*E. faecalis*
1	*E.faecium*
1	*S. agalactiae*
1	*A. urinae*
1	*P. aeruginosa*

RESULTS

144 microorganisms were originally isolated from the 130 urine samples tested with the manual system, and used as control; 58 Gram-positive bacteria (44 *Enterococcus spp*, 7 *Staphylococcus aureus*, 6 *Streptococcus spp*, 1 *Aerococcus urinae*), 85 Gram-negative bacteria (62 *Enterobacterales* and 23 non-fermenting Gram-negative bacteria) and 1 *Candida albicans*. Usually, *E.coli* identification is based on the tipical pink color of the colonies grown on CPS® Elite. The twelve *E.coli* strains included in the study were identified through MALDI-ToF because of their uncertain color on the chromogenic media. When assessed by Colibrì™, an overall agreement of 94.4% (136/144) was found. In detail, the agreement was 98.8% (84/85) and 87.9% (51/58) respectively, for Gram-negative and Gram-positive bacteria. *C. albicans* was identified by both preparation methods. In comparison to the manual method the target prepared by Colibrì™ reported no identification for 5/44 *Enterococcus spp*, 1/5 *S. agalactiae*, 1/2 *A. urinae* and 1/21 *Pseudomonas aeruginosa*.

CONCLUSION

Fully-automated Colibrí™ showed a very good performance on target preparation allowing MALDI-ToF microbial identification, thus allowing a better optimization of the staff hands-on-time, the standardization of protocols, and a complete samples traceability, also contributing to an improvement of the safety of laboratory personnel.