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Poster Session VI

Detection of MRSA and identification of staphylococci at species level

EVALUATION OF A NEW CHROMOGENIC MEDIUM FOR ISOLATION OF MRSA FOR USE WITH OR WITHOUT ENRICHMENT CULTURE.

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Objectives: To evaluate a new chromogenic medium, chromID MRSA SMART, against two established chromogenic agars; chromID MRSA and *Brilliance* MRSA II for the isolation of methicillin-resistant *Staphylococcus aureus* (MRSA) from screening swabs.

Methods: Screening swabs ($n = 195$) were collected from patients attending the Freeman Hospital, Newcastle upon Tyne, UK. These comprised nasal swabs ($n = 65$), throat swabs ($n = 65$) and perineum swabs ($n = 65$). The material from each swab was suspended in 0.5 ml of saline (0.85 %) and a 50 μ l aliquot of this suspension was then cultured on each of the three chromogenic media and all media were incubated at 35°C for exactly 18 h. All three chromogenic media were examined and colonies investigated (see below) and the plates were then reexamined after a further 6 h incubation. Plates of chromID MRSA were also examined after a total of 48 h incubation.

A 50 μ l aliquot was also inoculated into Brain Heart Infusion broth and incubated for 18 h, before a 20 μ l aliquot was removed and cultured onto the three media. All plates were examined after 18 h of incubation only. All colonies on all media were identified using MALDI-ToF mass spectrometry. Resistance to methicillin in *S. aureus* was confirmed using the Clearview Exact PBP 2a immunochromatographic assay and susceptibility testing to ceftaxime using the methodology specified by EUCAST.

Results:

Table: Isolation of MRSA (and other isolates) on three chromogenic media with and without broth enrichment.

	18 h			24 h			48 h			Enrichment		
	chrom	SMART	BRIL	chrom	SMART	BRIL	chrom	chrom	SMART	BRIL		
MRSA (detected)	10	12	9	12	12	9	12	8	11	8		
Total												
commensals	47	13	13	68	17	29	112	64	19	22		
False positives	0	0	0	0	0	0	24	21	0	1		
Sensitivity	77	92	69	92	92	69	92	62	85	62		
Specificity	100	100	100	100	100	100	87	88	100	99		
PPV	100	100	100	100	100	100	33	28	100	89		
NPV	98	99	98	99	99	98	99	97	99	97		

A total of 13 isolates of MRSA were recovered using a combination of all media. The table shows that chromID MRSA SMART shows potential as an effective medium for isolation of MRSA after only 18 h of incubation. All MRSA that were recovered on this medium produced colonies with a clearly visible pink coloration after 18 h incubation. There was no apparent advantage of broth enrichment. No false positive colonies were recovered either before or after enrichment and the number of commensals recovered was lower than on any other medium. ChromID MRSA showed equivalent sensitivity only after 24 h incubation due to the delay in coloration of two isolates of MRSA. *Brilliance* MRSA II also showed very high specificity but one false positive isolate of MSSA was recovered after enrichment. Four isolates of MRSA were not recovered using this medium.

Conclusion: This preliminary study suggests that chromID MRSA SMART is a potentially sensitive and specific medium for detection of MRSA after 18 h incubation. Much larger studies are required in

different geographical locations to validate these findings.