

Screening for *Salmonella* and *Shigella* in faecal samples



A rapid protocol using only three Diatabs for the screening of lactose non-fermenting colonies for the presence of *Salmonella* and *Shigella* in faecal specimens cultured on conventional media

Introduction

The method is a rapid, cost-effective screening test that reduces unnecessary identifications by using the minimum number of biochemical characters for the selection of isolates from conventional agars for further testing or

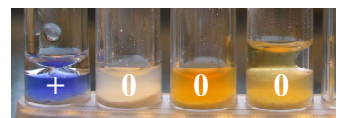
discarding of isolates not relevant for further testing. It reduces the burden on the laboratory of full biochemical identifications and serological tests.

THE LOUIS TEST:

L	=	Lysine decarboxylase (LDC)
O	=	ONPG (o-nitrophenyl-beta-D-galactopyranoside)
U	=	Urease (URE)
I	=	Indole (IND)
S	=	Screen Test

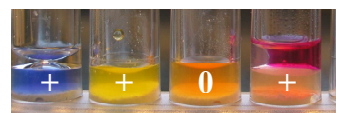
"The LOUIS test is a screening protocol for Salmonella and Shigella using rapid enzyme tests. It had a sensitivity of 100% and a specificity of 94%, and achieved presumptive reporting of Salmonella three hours after colony isolation with savings of time and money compared to commercial identification systems" (2).

LCD ONPG URE IND



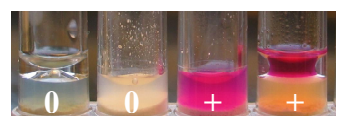
Salmonella spp.

LCD ONPG URE IND



E. coli

LCD ONPG URE IND



Proteus spp.

Procedure

	LDC/IND (Double Test Tablet)	ONPG	URE
Media*/Suspension	1. Suspect oxidase negative colonies are inoculated in 1 ml of sterile saline to give a dense suspension (McFarland 4). 2. Dispense 200 µl into 3 test tubes and inoculate an agar plate to confirm purity. 3. Add one Diatabs to each tube.		
Oil (3 drops of mineral oil)	Yes	No oil	Yes
Incubation	37 °C for 3 hours	37 °C for 3 hours	37 °C for 3 hours
Results I	Positive: Blue/violet Negative: Yellow, green, grey	Positive: Yellow Negative: Colourless	Positive: Red/purple Negative: Yellow/orange
Results II	After scoring the LDC reaction: Add 3 drops of Kovacs' reagent to the tube for the Indole reaction. Positive: Red (surface layer). Negative: Yellow		
Further testing or discarding of the isolates depends on the profile according to the LOUIS test algorithm			

* Lactose non-fermenting colonies from MacConkey or Deoxycholate-Lactose-Sucrose agar. If black or translucent colonies from Xylose-Lysine-Deoxycholate (XLD) agar are picked up, use the Urease/TDA double tablet since retarded urease reactions may be seen. The TDA reaction is unaffected by the XLD agar and more specific for *Proteus* spp.

The LOUIS test algorithm

LDC	ONPG	URE	IND	Possible ID	Step 1	Step 2
+	+	0	+	<i>E. coli</i>	Discard	
+	0	0	+			
0	0	+	+	<i>Proteus</i> spp. or <i>Morganella morganii</i>	Discard	
0	0	+	0			
+	0	0	0	<i>Salmonella</i> spp.	Confirm by serology	Serology Positive: Identify Negative: Discard
0	0	0	0	<i>Shigella</i> spp. (LDC neg. <i>Salmonella</i> spp)	Full biochemical identification	Confirm by serology Negative serology: Discard
0	0	0	+	<i>Shigella</i> spp.	Full biochemical identification	Confirm by serology Negative serology: Discard
0	+	0	0	<i>Shigella sonnei</i> or <i>Shigella dysenteriae</i>	Confirm by serology	Serology Positive: Identify Negative: Discard

Rosco Products

58411	Lysine Decarboxylase/Indole	LDC/IND
50311	ONPG (Beta-Galactosidase)	ONPG
57511	Urease	URE
92031	Kovacs' reagent	-

More information about the individual product is available in the User's Guide for Diatabs on the website www.rosco.dk.

References:

- Wilson G. The LOUIS test: a rapid biochemical based protocol for the screening of lactose non-fermenting colonies for the presence of *Salmonella* and *Shigella*. Poster. ECCMID 2003.
- Wilson G. Rapid and Economical Method for the Biochemical Screening of Stool Isolates for *Salmonella* and *Shigella* Species. J. Clin. Microbiol. 42, 4821-3, 2004.

Rosco Diagnostica A/S
 Taastrupgaardsvej 30
 DK-2630 Taastrup
 Tlf +45 43 99 33 77
 Fax +45 43 52 73 74
www.rosco.dk