The footnotes used in Table E.1 are the following:

a Full names of media abbreviated terms are given in Table E.2.

b Strains to be used as a minimum.

c Make reference to the reference strain catalogue available on http://www.wfcc.info for information on culture collection strain numbers and contact details.

d Strain free of choice; one of the strains has to be used as a minimum.

e L: liquid medium, S: solid medium, SS: semi-solid medium.

f Growth/turbidity is categorized as: 0 — no growth/no turbidity; 1 — weak growth/slight turbidity; 2 — growth/good turbidity (see 7.4.1.2, 8.4.1).

g *Escherichia coli* WDCM 00013 is given by the specific standard.

h *Escherichia coli* WDCM 00013 is a strong β-d-glucuronidase producer and WDCM 00202 is a weak β-d-glucuronidase producer.

i Some national restrictions and directions may require the use of a different serovar. Make reference to national requirements relating to the choice of *Salmonella* serovars.

j In case of both quantitative and qualitative use for the medium, only results of the quantitative tests are required (see Table E.1).

k More details for quality control of MSRV medium including final concentration of the inoculum and criteria are given in ISO 6579.

l If nutrient agar is used for two or three of these different applications: perform the *Salmonella* growth test as a minimum (if laboratory tests for this organism).

m If BPW is used for two or three of these different applications: perform the *Salmonella* enrichment test as a minimum (if laboratory tests for this organism).

n Choose the strain(s) according to the method for which TSA is used as a reference medium.

Table E.1 — Test microorganisms and performance criteria for culture media commonly used in food microbiology

Selective media for enumeration of microorganisms											
Media[a]	**Type**[e]	**Microorganism**	**International Standard**	**Function**	**Incubation**	**Control strain**	**WDCM number**[c]	**Reference media**	**Method of control**	**Criteria**	**Characteristic reaction**
Agar Listeria according to Ottaviani and Agosti	S	*Listeria monocytogenes*	ISO 11290-2	Productivity	(44 ± 4) h/ (37 ± 1) °C	*Listeria monocytogenes* 4b *Listeria monocytogenes* 1/2a	00021[b] 00109	TSA	Quantitative	$P_R \geq 0,5$	Blue green colonies with opaque halo
				Selectivity		*Escherichia coli*[d] *Enterococcus faecalis*[d]	00012 or 00013 00009 or 00087	—	Qualitative	Total inhibition (0)	—
				Specificity		*Listeria innocua*	00017	—	Qualitative	—	Blue green colonies without opaque halo
Baird-Parker	S	Coagulase-positive staphylococci	ISO 6888-1	Productivity	(24 ± 2) h to (48 ± 2) h/ (37 ± °1) °C	*Staphylococcus aureus*	00034[b] 00032	TSA	Quantitative	$P_R \geq 0,5$	Black or grey colonies with clear halo (egg yolk clearing reaction)
				Selectivity	(48 ± 2) h/ (37 ± 1) °C	*Escherichia coli*[d]	00012 00013	—	Qualitative	Total inhibition (0)	—
				Specificity	(24 ± 2) h to (48 ± 2) h/ (37 ± 1) °C	*Staphylococcus saprophyticus* *Staphylococcus epidermidis*	00159[b] 00036	—	Qualitative	—	Black or grey colonies without egg yolk clearing reaction
BGBLB	L	Coliforms	ISO 4831	Productivity	(24 ± 2) h to (48 ± 2) h/ (30 ± 1) °C	*Escherichia coli* *Citrobacter freundii*	00012[b] 00013 00006	—	Qualitative	Turbidity (2)[f] and gas in Durham tube	Gas production and turbidity
				Selectivity		*Enterococcus faecalis*[d]	00009 00087	—	Qualitative	Partial inhibition without gas production	—
CFC	S	*Pseudomonas spp.*	ISO 13720	Productivity	(44 ± 4) h/ (25 ± 1) °C	*Pseudomonas fluorescens* *Pseudomonas fragi*	00115[b] 00116	TSA	Quantitative	$P_R \geq 0,5$	—
				Selectivity		*Escherichia coli*[d]	00012 00013	—	Qualitative	Total inhibition (0)	—

Table E.1 *(continued)*

DG18	S	Yeasts and moulds	ISO 21527-2	Productivity	5 d/ (25 ± 1) °C	*Saccharomyces cerevisiae*	00058[b]	SDA	Quantitative	$P_R \geq 0,5$	Characteristic colony/propagules according to each species
						Wallemia sebi	00182[b]				
						Aspergillus restrictus	00183				
						Eurotium rubrum	00184				
				Selectivity		*Escherichia coli*	00012 or 00013[g]	—	Qualitative	No growth	—
						Bacillus subtilis subsp. spizizenii	00003				
DRBC	S	Yeasts and moulds	ISO 21527-1	Productivity	5 days/ (25 ± 1) °C	*Saccharomyces cerevisiae*	00058[b]	SDA	Quantitative	$P_R \geq 0,5$	Characteristic colony/propagules according to each species
						Aspergillus brasiliensis	00053[b]				
						Candida albicans	00054				
						Mucor racemosus	00181				
				Selectivity		*Escherichia coli*	00012 or 00013[g]	—	Qualitative	No growth	—
						Bacillus subtilis subsp. spizizenii	00003				
EC	L	*Escherichia coli*	ISO 7251	Productivity	(24 ± 2) h to (48 ± 2) h/ (44 ± 1) °C	*Escherichia coli*	00012[b] 00013	—	Qualitative	Turbidity (2)[f] and gas in Durham tube	Gas production and turbidity
				Selectivity		*Pseudomonas£ aeruginosa*	00025	—	Qualitative	No growth	—
IS ("TS")	S	Sulfite-reducing bacteria	ISO 15213	Productivity	(24 ± 3) h to (48 ± 2) h/ (37 ± 1) °C anaerobic atmosphere	*Clostridium perfringens*	00007[b] 00080	TSA or other non-selective medium for anaerobes	Quantitative	$P_R \geq 0,5$	Black colonies
				Specificity		*Escherichia coli*[d]	00012 00013	—	Qualitative	—	No blackening

Table E.1 *(continued)*

LST	L	Coliforms	ISO 4831	Productivity	(24 ± 2) h to (48 ± 2) h/ (30 ± 1) °C	*Escherichia coli* *Citrobacter freundii*	00012[b] 00013 00006	—	Qualitative	Turbidity (2)[f] and gas in Durham tube	Gas production and turbidity
				Selectivity		*Enterococcus faecalis*[d]	00009 00087	—	Qualitative	No growth	—
		Escherichia coli	ISO 7251	Productivity	(24 ± 2) h to (48 ± 2) h/ (37 ± 1) °C	*Escherichia coli*	00012[b] 00013	—	Qualitative	Turbidity (2)[fi] and gas in Durham tube	Gas production and turbidity
				Selectivity		*Enterococcus faecalis*[d]	00009 00087	—	Qualitative	No growth	—
mCCDA	S	*Campylobacter*	ISO 10272-2	Productivity	(44 ± 4) h/ (41,5 ± 1) °C microaerobic atmosphere	*Campylobacter jejuni*[d] *Campylobacter coli*[d]	00156 00005 00004	Blood agar	Quantitative	$P_R \geq 0,5$	Greyish, flat and moist, sometimes with metallic sheen
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	—	—
						Staphylococcus aureus	00034	—	Qualitative	—	—
MRS	S	Lactic acid bacteria	ISO 15214	Productivity	(72 ± 3) h/ (30 ± 1) °C	*Lactobacillus sakei* *Lactococcus lactis* *Pediococcus pentosaceus*	00015[b] 00016[b] 00158	Media batch MRS already validated	Quantitative	$P_R \geq 0,7$	Characteristic colonies according to each species
				Selectivity	(72 ± 3) h/ (30 ± 1) °C	*Escherichia coli*[d] *Bacillus cereus*	00012 or 00013 00001	—	Qualitative	Total inhibition (0)	—
MYP	S	*Bacillus cereus*	ISO 7932	Productivity	(24 ± 3) h to (44 ± 4) h/ (30 ± 1) °C	*Bacillus cereus*	00001	TSA	Quantitative	$P_R \geq 0,5$	Pink colonies with precipitation halo
				Selectivity	(44 ± 4) h/ (30 ± 1) °C	*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0)	—
				Specificity		*Bacillus subtilis subsp. spizizenii*	00003	—	Qualitative	—	Yellow colonies without precipitation halo

Table E.1 *(continued)*

RPFA	S	Coagulase-positive staphylococci	ISO 6888-2	Productivity	(24 ± 2) h to (48 ± 2) h/ (37 ± 1) °C	*Staphylococcus aureus*	00034[b] 00032	TSA	Quantitative	$P_R \geq 0,5$	Black or grey colonies with opacity halo
				Selectivity	(48 ± 2) h/ (37 ± 1) °C	*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0)	—
				Specificity	(24 ± 2) h to (48 ± 2) h/ (37 ± 1) °C	*Staphylococcus saprophyticus*	00159[b]	—	Qualitative	—	Black or grey colonies without opacity halo
						Staphylococcus epidermidis	00036				
PPA	S	*Pseudomonas spp.*	ISO/ TS 11059	Productivity	(48 ± 2) h/ (25 ± 1) °C	*Pseudomonas fluorescens*	00115[b]	TSA	Quantitative	$P_R \geq 0,5$	—
						Pseudomonas aeruginosa	00025				
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0)	—
TBX	S	β-D-Glucuronidase-positive *Escherichia coli*	ISO 16649-1 and ISO 16649-2	Productivity	(21 ± 3) h/ (44 ± 1) °C	*Escherichia coli*[h]	00012[d] 00013[d] 00202[b]	TSA	Quantitative	$P_R \geq 0,5$	Blue colonies
				Selectivity		*Enterococcus faecalis*[d]	00009 00087		Qualitative	Total inhibition (0)	—
				Specificity		*Citrobacter freundii*	00006[b]		Qualitative	—	White to green-beige colonies
						Pseudomonas aeruginosa	00025				
TSC (SC)	S	*Clostridium perfringens*	ISO 7937	Productivity	(20 ± 2) h/ (37 ± 1) °C anaerobic atmosphere	*Clostridium perfringens*	00007[b] 00080	TSA or other non-selective medium for anaerobes	Quantitative	$P_R \geq 0,5$	Black colonies
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0)	—
						Pseudomonas aeruginosa	00025				
VRBG	S	*Enterobacteriaceae*	ISO 21528-2	Productivity	(24 ± 2) h/ (37 ± 1) °C	*Escherichia coli*	00012[b] 00013	TSA	Quantitative	$P_R \geq 0,5$	Pink to red colonies with or without precipitation halo
						Salmonella Typhimurium[d,i] *Salmonella* Enteritidis[d,i]	00031 00030				
				Selectivity		*Enterococcus faecalis*[d]	00009 00087	—	Qualitative	Total inhibition (0)	—

Table E.1 *(continued)*

VRBL	S	Coliforms	ISO 4832	Productivity	(24 ± 2) h/ (30 ± 1) °C	*Escherichia coli*	00012[b] 00013	TSA	Quantitative	$P_R \geq 0,5$	Purplish-red colonies with or without precipitation halo
				Selectivity		*Enterococcus faecalis*[d]	00009 00087	—	Qualitative	Total inhibition (0)	—
				Specificity		*Pseudomonas aeruginosa*	00025		Qualitative	—	Colourless to beige colonies
Non-selective media for enumeration of microorganisms											
Media[a]	**Type[e]**	**Micro-organisms**	**International Standard**	**Function**	**Incubation**	**Control strains**	**WDCM numbers[c]**	**Reference media**	**Method of control**	**Criteria**	**Characteristic reactions**
PCA MPCA	S	Colony count	ISO 4833	Productivity	(72 ± 3) h/ (30 ± 1) °C	*Bacillus subtilis subsp. spizizenii*	00003[b]	TSA	Quantitative	$P_R \geq 0,7$	—
						Escherichia coli	00012[b] 00013				
						Staphylococcus aureus	00034				
Selective enrichment media											
Media[a]	**Type[e]**	**Micro-organisms**	**International Standard**	**Function**	**Incubation**	**Control strains**	**WDCM numbers[c]**	**Reference media**	**Method of control**	**Criteria**	**Characteristic reactions of target microorganism**
Bolton	L	*Campylobacter*	ISO 10272-1	Productivity	(5 ± 1) h/ (37 ± 1) °C then (44 ± 4) h/ (41,5 ± 1) °C microaerobic atmosphere	*Campylobacter jejuni*[d] *Campylobacter coli*	00156 or 00005 00004	—	Qualitative	> 10 colonies on mCCDA	Greyish, flat and moist, sometimes with metallic sheen
						+ *Escherichia coli*[d]	00012 00013				
						+ *Proteus mirabilis*	00023				
				Selectivity		*Escherichia coli*[d]	00012 00013	—	Qualitative	Total inhibition (0) on TSA	—
						Proteus mirabilis	00023				

Table E.1 *(continued)*

EE	L	*Enterobacteriaceae*	ISO 21528-1	Productivity	(24 ± 2) h/ (37 ± 1) °C	*Escherichia coli*	00012[b] 00013	—	Qualitative	> 10 colonies on VRBG	Pink to red colonies with or without precipitation halo
						+ *Enterococcus faecalis*[d]	00009 or 00087				
						Salmonella Typhimurium[i] *Salmonella* Enteritidis[i]	00031 or 00030				
						+ *Enterococcus faecalis*[d]	00009 or 00087				
				Selectivity		*Enterococcus faecalis*[d]	00009 or 00087	—	Qualitative	Total inhibition (0) on TSA	—
Fraser	L	*Listeria monocytogenes*	ISO 11290-1	Productivity	(48 ± 2) h/ (37 ± 1) °C	*Listeria monocytogenes* 4b	00021[b]	—	Qualitative	> 10 colonies on Agar Listeria according to Ottaviani and Agosti	Blue green colonies with opaque halo
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Enterococcus faecalis*[d]	00009 or 00087				
						Listeria monocytogenes 1/2a	00109				
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Enterococcus faecalis*[d]	00009 or 00087				
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0) on TSA	—
						Enterococcus faecalis[d]	00009 or 00087	—	Qualitative	< 100 colonies on TSA	—
Giolitti Cantoni	L	Coagulase-positive staphylococci	ISO 6888-3	Productivity	(24 ± 2) h to (48 ± 2) h/ (37 ± 1) °C	*Staphylococcus aureus*	00034[b]	—	Qualitative	> 10 colonies on Baird Parker or RPFA	Characteristic colonies according to each medium (see ISO 6888-1 for Baird Parker and ISO 6888-2 for RPFA)
						+ *Escherichia coli*[d]	00012 or 00013				
						Staphylococcus aureus	00032				
						+ *Escherichia coli*[d]	00012 or 00013				
				Selectivity	(48 ± 2) h/ (37 ± 1) °C	*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0) on TSA	—

Table E.1 *(continued)*

Half-Fraser	L	*Listeria monocytogenes*	ISO 11290-1	Productivity	(24 ± 2) h/ (30 ± 1) °C	*Listeria monocytogenes* 4b	00021[b]	—	Qualitative	> 10 colonies on Agar Listeria according to Ottaviani and Agosti	Blue green colonies with opaque halo
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Enterococcus faecalis*[d]	00009 or 00087				
						Listeria monocytogenes 1/2a	00109				
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Enterococcus faecalis*[d]	00009 or 00087				
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0) on TSA	—
						Enterococcus faecalis[d]	00009 or 00087	—	Qualitative	< 100 colonies on TSA	—
ITC	L	*Yersinia enterocolitica*	ISO 10273	Productivity	(44 ± 4) h/ (25 ± 1) °C	*Yersinia enterocolitica*	00038[b]	—	Qualitative	> 10 colonies on CIN or SSDC	Characteristic colonies according to each medium (see ISO 10273)
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Pseudomonas aeruginosa*	00025				
				Selectivity		*Pseudomonas aeruginosa*	00025	—	Qualitative	Total inhibition (0) on TSA	—
						Proteus mirabilis	00023				
MKTTn	L	*Salmonella*	ISO 6579	Productivity	(24 ± 3) h/ (37 ± 1) °C	*Salmonella* Enteritidis[d,i] *Salmonella* Typhimurium[d,i]	00030 00031	—	Qualitative	> 10 colonies on XLD or other medium of choice	Characteristic colonies according to each medium (see ISO 6579)
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Pseudomonas aeruginosa*	00025				
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Partial inhibition ≤ 100 colonies on TSA	—
						Enterococcus faecalis[d]	00009 or 00087	—	Qualitative	< 10 colonies on TSA	—

Table E.1 *(continued)*

MSRV[k]	SS	*Salmonella*	ISO 6579	Productivity	2 × (24 ± 3) h/ (41,5 ± 1) °C	*Salmonella* Enteritidis[d,i]	00030	—	Qualitative	Grey-white, turbid zone extending out from inoculated drop(s). After 24–48 h, the turbid zone(s) will be (almost) fully migrated over the plate.	Possible extra: characteristic colonies after subculturing on XLD[k]
						Salmonella Typhimurium[d,i]	00031				
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Possible growth at the place of the inoculated drop(s) without a turbid zone.	—
						Enterococcus faecalis[d]	00009 or 00087	—	Qualitative	No growth	—
MMG	L	β-D-Glucuronidase-positive *E. coli*	ISO 16649-3	Productivity	(24 ± 2) h/ (37 ± 1) °C	*Escherichia coli*	00012[b] 00013	—	Qualitative	Acid production	Colour change to yellow
				Selectivity		*Enterococcus faecalis*[d]	00009 or 00087	—	Qualitative	No growth	—
PSB	L	*Yersinia enterocolitica*	ISO 10273	Productivity	3 to 5 days/ (25 ± 1) °C	*Yersinia enterocolitica*	00038[b]	—	Qualitative	> 10 colonies on CIN or SSDC	Characteristic colonies according to each medium (see ISO 10273)
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Pseudomonas aeruginosa*	00025				
				Selectivity		*Yersinia enterocolitica*	00160				
						+ *Escherichia coli*[d]	00012 or 00013				
						+ *Pseudomonas aeruginosa*	00025				
						Pseudomonas aeruginosa	00025	—	Qualitative	Total inhibition (0) on TSA	—
						Proteus mirabilis	00023				

Table E.1 *(continued)*

RVS	L	*Salmonella*	ISO 6579	Productivity	(24 ± 3) h/ (41,5 ± 1) °C	*Salmonella* Enteritidis[d,i] *Salmonella* Typhimurium[d,i] + *Escherichia coli* + *Pseudomonas aeruginosa*	00030 00031 00012 or 00013 00025	—	Qualitative	> 10 colonies on XLD or other medium of choice	Characteristic colonies according to each medium (see ISO 6579)
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Partial inhibition ≤ 100 colonies on TSA	—
						Enterococcus faecalis[d]	00009 or 00087	—	Qualitative	< 10 colonies on TSA	—
TSPB	L	*Bacillus cereus*	ISO 21871	Productivity	(48 ± 4) h/ (30 ± 1) °C	*Bacillus cereus*	00001	—	Qualitative	> 10 colonies on PEMBA or MYP	Characteristic colonies according to each medium (see ISO 21871)
				Selectivity		*Escherichia coli*[d]	00012 or 00013	—	Qualitative	Total inhibition (0) on TSA	—
Non-selective liquid media											
Media[a]	**Type**[e]	**Micro-organisms**	**International Standard**	**Function**	**Incubation**	**Control strains**	**WDCM numbers**[c]	**Reference media**	**Method of control**	**Criteria**	**Characteristic reactions**
BHI	L	Coagulase-positive staphylococci	ISO 6888-1 ISO 6888-3	Productivity	(24 ± 2) h/ (37 ± 1) °C	*Staphylococcus aureus*	00034	—	Qualitative	Turbidity (1–2)[f]	—
Brucella	L	*Campylobacter*	ISO 10272 (all parts)	Productivity	2 to 5 days/ (41,5 ± 1) °C microaerobic atmosphere	*Campylobacter jejuni*[d] *Campylobacter coli*[d]	00156 00005 00004	—	Qualitative	Turbidity (1–2)[f]	—
Diluents for special purposes e.g. BPW with bromo-cresol-purple	L	Dilution liquids	ISO 6887 (all parts)	Diluent	45 min – 1 h/ 20 °C to 25 °C	*Escherichia coli*[d] *Staphylococcus aureus*	00012 or 00013 00034[b]	TSA	Quantitative	±30 % colonies/ T_0 (±30 % of original count)	—