

## CCM CONTROL STRAINS

The Czech Collection of Microorganisms (CCM) provides quality control strains, which are especially intended for human and veterinary clinical laboratories, as well as for microbiological laboratories dealing with the quality control of food and water. The quality control strains are supplied freeze-dried in sealed glass ampoules (freeze dried) or in the gelatine disks form (GD).

### Microbiology of food and animal feeding stuffs

CCM	Species	Detailed Specifications	GD
552	<i>Kocuria rhizophila</i>	determination of inhibitory substances in the food	✓
869	<i>Bacillus cereus</i>	ISO 11133 media testing	✓
883	<i>Staphylococcus saprophyticus</i> subsp. <i>saprophyticus</i>	ISO 11133	×
885	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	ISO 10272-1, ISO/TS 10272-3 catalase test	×
1799	<i>Proteus</i> sp.	media testing	✓
1803	<i>Leuconostoc mesenteroides</i> subsp. <i>mesenteroides</i>	media testing	×
1828	<i>Lactocaseibacillus rhamnosus</i>	media testing	✓
1877	<i>Lactococcus lactis</i> subsp. <i>lactis</i>	ISO 111133 media testing, ISO 10932	×
1903	<i>Enterobacter cloacae</i> subsp. <i>cloacae</i>	media testing	✓
1914	<i>Aerococcus viridans</i>	ISO 111133 media testing	×
1960	<i>Pseudomonas aeruginosa</i>	ISO 111133 media testing	✓
1961	<i>Pseudomonas aeruginosa</i>	ISO 111133 media testing	✓
1974	<i>Pseudomonas fragi</i>	ISO 111133 media testing	×
1999	<i>Bacillus spizizenii</i>	ISO 111133 media testing, ISO 14189	✓
2010	<i>Bacillus cereus</i>	media testing	✓
2022	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	media testing	✓
2115	<i>Pseudomonas fluorescense</i>	ISO 111133 media testing	×
2124	<i>Staphylococcus epidermidis</i>	ISO 111133 media testing	×
2308	<i>Enterococcus faecium</i>	ISO 111133 media testing	×
2423	<i>Enterococcus hirae</i>	ISO 111133 media testing	✓
2541	<i>Enterococcus faecalis</i>	ISO 111133 media testing	×
2578	<i>Vibrio alginolyticus</i>	media testing	×
3953	<i>Staphylococcus aureus</i>	ISO 111133 media testing	✓
3954	<i>Escherichia coli</i>	ISO 111133 media testing, ISO 16649-3	✓
3955	<i>Pseudomonas aeruginosa</i>	ISO 111133 media testing, ISO 16649-3	✓
3989	<i>Pseudomonas aeruginosa</i>	ISO 10272-1, ISO/TS 10272-3 oxidase test	×
4030	<i>Listeria innocua</i>	ISO 111133 media testing	✓
4062	<i>Bacillus subtilis</i> subsp. <i>spizizenii</i>	determination of inhibitory substances in food	×
4224	<i>Enterococcus faecalis</i>	ISO 111133 media testing, ISO 16649-3	✓
4418	<i>Staphylococcus epidermidis</i>	ISO 111133 media testing	✓
4420	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Enteritidis	media testing	✓
4422	<i>Shigella flexneri</i>	media testing	✓
4424	<i>Streptococcus pneumoniae</i>	media testing	✓
4425	<i>Streptococcus pyogenes</i>	media testing	✓
4435	<i>Clostridium perfringens</i>	ISO 111133 media testing, ISO 14189	✓
4516	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	ISO 111133 media testing	✓
4517	<i>Escherichia coli</i>	ISO 111133 media testing	✓
4699	<i>Listeria monocytogenes</i>	media testing	✓
4769	<i>Brochothrix thermosphacta</i>	media testing	×
4787	<i>Escherichia coli</i> (O157 avirulent)	ISO 111133 media testing	×
4897	<i>Campylobacter lari</i>	ISO 10272-1, ISO/TS 10272-3 hydrolysis of indoxyl acetate test	×
4991	<i>Clostridium perfringens</i>	media testing	✓
5172	<i>Escherichia coli</i>	ISO 10272-1, ISO/TS 10272-3 oxidase test, ISO 111133 media testing	×
5576	<i>Listeria monocytogenes</i>	ISO 111133 media testing	✓
5671	<i>Yersinia enterocolitica</i>	media testing	✓
5884	<i>Listeria ivanovii</i>	media testing	✓
5937	<i>Vibrio parahaemolyticus</i>	media testing	✓
5965	<i>Geobacillus stearothermophilus</i>	determination of inhibitory substances in the food	✓
6214	<i>Campylobacter jejuni</i> subsp. <i>jejuni</i>	ISO 10272-1, ISO/TS 10272-3 hydrolysis of indoxyl acetate and hippurate tests	✓

CCM	Species	Detailed Specifications	GD
7000	<i>Enterococcus faecalis</i>	ISO 10272-1, ISO/TS 10272-3 catalase test, ISO/TS 11133-2 media testing, ISO 111133 media testing, ISO 16649-3	✓
7039	<i>Lactobacillus plantarum</i>	ISO 10932	×
7089	<i>Lactobacillus casei</i>	ISO 10932	×
7156	<i>Pseudomonas putida</i>	ISO 10712	×
7176	<i>Clostridium perfringens</i>	ISO 111133 media testing, ISO 14189	×
7187	<i>Citrobacter freundii</i>	ISO 111133 media testing, ISO 16649-3	✓
7188	<i>Proteus mirabilis</i>	ISO 111133 media testing	×
7189	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Enteritidis	ISO 111133 media testing	✓
7190	<i>Lactobacillus delbrueckii</i> subsp. <i>bulgaricus</i>	media testing	×
7202	<i>Listeria monocytogenes</i>	ISO 111133 media testing	×
7203	<i>Lactobacillus sakei</i> subsp. <i>sakei</i>	ISO 111133 media testing	×
7204	<i>Yersinia enterocolitica</i> subsp. <i>enterocolitica</i>	ISO 111133 media testing	×
7205	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	ISO 111133 media testing	✓
7212	<i>Campylobacter jejuni</i> subsp. <i>jejuni</i>	ISO 111133 media testing	✓
7227	<i>Campylobacter coli</i>	ISO 111133 media testing	✓
7372	<i>Escherichia coli</i>	determination of inhibitory substances in the food	×
7376	<i>Campylobacter coli</i>	ISO 10272-1, ISO/TS 10272-3 hydrolysis of indoxyl acetate and hippurate tests	×
7395	<i>Escherichia coli</i>	ISO/TS 16649-3, ISO 111133 media testing, ISO 16649-3	×
7796	<i>Pediococcus pentosaceus</i>	ISO 15214, ISO 111133 media testing	×
7797	<i>Klebsiella aerogenes</i>	ISO 111133 media testing	✓
7799	<i>Legionella pneumophila</i> subsp. <i>pneumophila</i>	ISO 111133 media testing	✓
7800	<i>Enterococcus faecium</i>	ISO 111133 media testing	×
7801	<i>Escherichia coli</i>	ISO 111133 media testing	×
7803	<i>Campylobacter jejuni</i> subsp. <i>jejuni</i>	EN ISO 16654	×
7825	<i>Bifidobacterium breve</i>	media testing	×
7826	<i>Bifidobacterium longum</i> subsp. <i>longum</i>	media testing, ISO 10932	×
8186	<i>Candida albicans</i>	media testing	✓
8189	<i>Aspergillus niger</i>	media testing	✓
8191	<i>Saccharomyces cerevisiae</i>	ISO 111133 media testing	✓
8215	<i>Candida albicans</i>	ISO 111133 media testing	✓
8222	<i>Aspergillus brasiliensis</i>	ISO 111133 media testing	✓
8223	<i>Candida tropicalis</i>	media testing	✓
8363	<i>Aspergillus flavus</i>	media testing	✓
F-108	<i>Aspergillus parasiticus</i>	media testing	×
F-550	<i>Aspergillus parasiticus</i>	media testing	✓

## Water quality

CCM	Species	Detailed Specifications	GD
1799	<i>Proteus</i> sp.	media testing	✓
1877	<i>Lactococcus lactis</i> subsp. <i>lactis</i>	ISO 7899-1	×
1903	<i>Enterobacter cloacae</i> subsp. <i>cloacae</i>	media testing	✓
1911	<i>Aerococcus viridans</i>	ISO 7899-1	×
1960	<i>Pseudomonas aeruginosa</i>	ISO 11731, ISO 9308-1, ISO 16266, ISO 17995 oxidase test	✓
1961	<i>Pseudomonas aeruginosa</i>	ISO 11731, ISO 16266	✓
1999	<i>Bacillus spizizenii</i>	ISO 6222	✓
2010	<i>Bacillus cereus</i>	media testing	✓
2124	<i>Staphylococcus epidermidis</i>	ISO 7899-1	×
2308	<i>Enterococcus faecium</i>	ISO 7899-2, ISO 17995	×
2423	<i>Enterococcus hirae</i>	ISO 7899-1	✓
2541	<i>Enterococcus faecalis</i>	ISO 7899-1	×
3461	<i>Cronobacter sakazakii</i>	ISO 17995 oxidase test	✓
3953	<i>Staphylococcus aureus</i>	ISO 7899-2, ISO 17995 catalase test, KOH-test	✓
3954	<i>Escherichia coli</i>	ISO 11731, ISO 9308-1, ISO 16266, ISO 7899-2, ISO 6222, ISO 19250, ISO 8199, ISO 17995 KOH-test	✓
3955	<i>Pseudomonas aeruginosa</i>	ISO 11731, ISO 16266, ISO 19250	✓
4224	<i>Enterococcus faecalis</i>	ISO 19250, ISO 17995 catalase test	✓
4418	<i>Staphylococcus epidermidis</i>	media testing	✓

CCM	Species	Detailed Specifications	GD
4420	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Enteritidis	media testing	✓
4422	<i>Shigella flexneri</i>	media testing	✓
4424	<i>Streptococcus pneumoniae</i>	media testing	✓
4425	<i>Streptococcus pyogenes</i>	media testing	✓
4517	<i>Escherichia coli</i>	ISO 11731, ISO 9308-1, ISO 7899-2 , ISO 6222 , ISO 19250, ISO 17995	✓
4991	<i>Clostridium perfringens</i>	replaced toxigenic strains CCM 4435, Directive 98/83/EC	✓
5172	<i>Escherichia coli</i>	ISO 16266	×
7000	<i>Enterococcus faecalis</i>	ISO 11731, ISO 9308-1, ISO 7899-2 , ISO 19250	✓
7187	<i>Citrobacter freundii</i>	ISO 9308-1	×
7189	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Enteritidis	ISO 19250	✓
7205	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	ISO 19250	✓
7376	<i>Campylobacter coli</i>	ISO 17995	×
7797	<i>Klebsiella aerogenes</i>	ISO 9308-1	✓
7799	<i>Legionella pneumophila</i> subsp. <i>pneumophila</i>	ISO 11731	✓
7800	<i>Enterococcus faecium</i>	ISO 7899-1	×
7801	<i>Escherichia coli</i>	ISO 9308-3	×
7803	<i>Campylobacter jejuni</i> subsp. <i>jejuni</i>	ISO 17995	×
8186	<i>Candida albicans</i>	media testing	✓
8189	<i>Aspergillus niger</i>	media testing	✓
8191	<i>Saccharomyces cerevisiae</i>	media testing	✓
8775	<i>Paraclostridium bifermentans</i>	ISO4189	×

## Quality control of diagnostic tests

CCM	Species	Detailed Specifications	GD
303	<i>Serratia marcescens</i> subsp. <i>marcescens</i>	ENTEROtest 16, ENTERO-Rapid 24, ENTEROtest 24, COLItest, mCOLItest	✓
1484	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	VPtest, staphylococcal hyaluronidase test	✓
1799	<i>Proteus</i> sp.	ENTEROtest 16, ENTERO-Rapid 24, ENTEROtest 24, ENTEROtest 24N, E-Screen, GN 24, ONPtest	✓
1828	<i>Lactocaseibacillus rhamnosus</i>	ANAEROtest 23	✓
1875	<i>Enterococcus faecalis</i>	STREPTOtest 24	×
1903	<i>Enterobacter cloacae</i> subsp. <i>cloacae</i>	ENTEROtest 24, ENTERO-Rapid 24, ENTEROtest 24N, E-Screen, OFtest	✓
1944	<i>Proteus mirabilis</i>	ITEST ENTERO 3H	×
1960	<i>Pseudomonas aeruginosa</i>	NEFERMtest 24, NEFERMtest24N, OXItest, mOXItest, ONPtest, ITEST ONPG	✓
2124	<i>Staphylococcus epidermidis</i>	Slidex Staph Plus	×
2238	<i>Edwardsiella tarda</i>	ENTEROtest 16, ENTEROtest 24N, E-Screen	×
2535	<i>Citrobacter koseri</i>	ENTEROtest 16, ITEST, glutamic acid test	✓
2699	<i>Kytococcus sedentarius</i>	HIPPURATEtest, VPtest, STAPHYtest 24, BACITRACIN S	✓
2737	<i>Staphylococcus haemolyticus</i>	STAPHYtest 16, staphylococcal hyaluronidase	×
3296	<i>Myroides odoratus</i>	NEFERMtest 24, NEFERMtest 24N	✓
3343	<i>Cutibacterium acnes</i>	ANAEROtest 23	✓
3429	<i>Rhodococcus equi</i>	CAMP test ( <i>Listeria</i> )	✓
3461	<i>Cronobacter sakazakii</i>	NEFERMtest 24, NEFERMtest 24N, ONPtest, OXItest, mOXItest, ITEST ONPG	✓
3482	<i>Neisseria subflava</i>	NEISSERIAtest, ITEST: TRIBUTYRIN, INDOXYLACETATE, NEISS 8	✓
3572	<i>Staphylococcus gallinarum</i>	STAPHYtest 16, ITEST $\beta$ -GLUKOSIDASE, STAPHYtest 24	✓
3582	<i>Aggregatibacter aphrophilus</i>	X, V, X+V factor	×
3659	<i>Enterococcus cecorum</i>	STREPTOtest 24, ENC 8	×
3919	<i>Burkholderia</i> sp.	NEFERMtest 24, NEFERMtest 24N, OFtest	✓
3953	<i>Staphylococcus aureus</i>	NITROCEFAN, $\beta$ -LACTAMtest, Slidex Staph Plus, ITEST Staphycoagulase, GP 24	✓
3954	<i>Escherichia coli</i>	MIC G-I, MIC G-II, MIC NEFERM, MIC URINE, MIC monostrip	✓
3955	<i>Pseudomonas aeruginosa</i>	GN 24, OXI, MIC NEFERM, MIC monostrip	✓
3988	<i>Escherichia coli</i>	ENTERO-RAPID 24, COLItest, mCOLItest, ITEST: ENTERO 3H, ITEST glutamic acid test	✓
4043	<i>Streptococcus constellatus</i> subsp. <i>constellatus</i>	OPTOCHIN	✓

CCM	Species	Detailed Specifications	GD
4047	<i>Streptococcus sanguinis</i>	STREPTOtest 24	×
4069	<i>Staphylococcus lugdunensis</i>	STAPHYtest 16, STAPHYtest 24	✓
4216	<i>Enterococcus raffinosus</i>	EN-COCCUStest, ENC 8	✓
4223	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	NITROCEFAN, VP, MIC STAPHY, MIC monostrip	✓
4224	<i>Enterococcus faecalis</i>	PYRAtest, ITEST PYR test, GP 24, ENC 8, MIC G+, MIC monostrip	✓
4225	<i>Escherichia coli</i>	ENTEROtest 24N, INDOLtest, GN 24, COLI, ONP, MIC G-I, MIC G-II, MIC NEFERM, MIC URINE, MIC monostrip, DMACA reagent	✓
4296	<i>Staphylococcus urealyticus</i>	STAPHYtest 16, NOVOBIOCIN; ITEST: $\beta$ -GLUKOSIDASE, GP 24	✓
4391	<i>Branhamella catarrhalis</i>	NEISSERIAtest, ITEST: INDOXYLACETATE, TRIBUTYRIN, INDOXYLtest, NEISS 8, TRB	✓
4392	<i>Neisseria lactamica</i>	NEISSERIAtest, NEISS 8	✓
4418	<i>Staphylococcus epidermidis</i>	NOVOBIOCIN, STAPHYtest 24; ITEST: Staphy-coagulase	✓
4419	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	CARBA	×
4420	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Enteritidis	ENTEROtest 24, ENTEROtest 24N	✓
4425	<i>Streptococcus pyogenes</i>	BACITRACIN S; media testing GBS, BAC 0,04	✓
4457	<i>Haemophilus influenzae</i>	X, V, X+V factor, BACITRACIN H, BACITRACIN 10 UI	✓
4501	<i>Streptococcus pneumoniae</i>	BACITRACIN 10 UI, OPTOCHIN, V+K DISK; ITEST: BACITRACIN H, MIC monostrip	✓
4517	<i>Escherichia coli</i>	VITEK MS system	✓
4611	<i>Paeniclostridium sordellii</i>	ANAEROtest 23	✓
4617	<i>Streptococcus uberis</i>	HIPPURATEtest	×
4634	<i>Neisseria meningitidis</i>	V+K DISC; NEISS 8, ITEST N. meningitidis serology (groups A,B,C,X,Y)	×
4635	<i>Neisseria meningitidis</i>	ITEST N. meningitidis serology (groups A,B,C,X,Y)	×
4636	<i>Neisseria meningitidis</i>	ITEST N. meningitidis serology (groups A,B,C,X,Y)	×
4637	<i>Neisseria meningitidis</i>	ITEST N. meningitidis serology (groups A,B,C,X,Y)	×
4638	<i>Neisseria meningitidis</i>	ITEST N. meningitidis serology (groups A,B,C,X,Y)	×
4648	<i>Canicola haemoglobinophilus</i>	X, V, X+V factor, BACITRACIN S	×
4657	<i>Mammaliococcus sciuri</i>	STAPHYtest 24	×
4685	<i>Streptococcus</i> sp.	BACITRACIN S, OPT	×
4710	<i>Staphylococcus pseudintermedius</i>	CAMP test, CAMP test ( <i>Listeria</i> )	✓
5852	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	ENTEROtest 24N, INDOLtest, CANDIDA-Screen, GN 24, GP 24	×
5612	<i>Enterococcus durans</i>	EN-COCCUStest	×
6052	<i>Aggregatibacter segnis</i>	X, V, X+V factor	×
6187	<i>Streptococcus agalactiae</i>	PYRAtest, ITEST PYR test, CAMP test, media testing GBS, HIP	✓
7046	<i>Staphylococcus nepalensis</i>	STAPHYtest 24	×
7221	<i>Staphylococcus epidermidis</i>	$\beta$ -LACTAMtest	×
7316	<i>Streptococcus equi</i> subsp. <i>zooepidemicus</i>	staphylococcal hyaluronidase test	✓
8191	<i>Saccharomyces cerevisiae</i>	YST 8	✓
8226	<i>Candida albicans</i>	YST 8	×
8261	<i>Candida albicans</i>	CANDIDAtest 21, CANDIDA-Screen	✓
8271	<i>Candida crusei</i>	ITR	✓
8312	<i>Cryptococcus neoformans</i>	CANDIDAtest 21, CANDIDA-Screen, YST 8	✓
8321	<i>Pichia quilliermondii</i>	Assimilation diagnostic discs	×

## Cosmetics - Microbiology

CCM	Species	Detailed Specifications	GD
1961	<i>Pseudomonas aeruginosa</i>	ISO 18415, ISO 22717, ISO 11930, ISO 21149	✓
2022	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	ISO 21149, ISO 18415	✓
4516	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	ISO 18415, ISO 22718, ISO 11930	✓
4517	<i>Escherichia coli</i>	ISO 18415, ISO 21150, ISO 11930, ISO 21149	✓
8215	<i>Candida albicans</i>	ISO 18415, ISO 18416, ISO 16212, ISO 11930	✓
8222	<i>Aspergillus brasiliensis</i>	ISO 11930	✓

## Textiles – determination of antibacterial activity of textile products

CCM	Species	Detailed Specifications	GD
4516	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	EN ISO 20743	✓
8853	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	ISO 20645	×

## Monitoring the effectiveness of germicidal lamps

CCM	Species	GD
4684	<i>Serratia rubidaea</i>	✓

## Test organisms used for the determination of bactericidal, sporicidal and fungicidal activity

CCM	Species	Detailed Specifications	GD
1999	<i>Bacillus spizizenii</i>	EN 14347, EN 13704	✓
2308	<i>Enterococcus faecium</i>	ISO 16616	×
3988	<i>Escherichia coli</i>	EN 1276, EN 13697, EN 13727	✓
4516	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	EN 1040, EN 1276, EN 1656, EN 13727, EN 13697, EN 14561, EN 14349, EN 16437, ISO 16616	✓
4533	<i>Enterococcus hirae</i>	EN 1276, EN 1656, EN 13727, EN 13697, EN 14561, EN 14349, EN 16437, ISO 16616	×
7011	<i>Proteus hauseri</i>	EN 1656, EN 14349, EN 16437	×
7799	<i>Legionella pneumophila</i> subsp. <i>pneumophila</i>	EN 13623	×
7929	<i>Escherichia coli</i>	EN 1276, EN 13697, ISO 16616	×
7930	<i>Pseudomonas aeruginosa</i>	EN 1040, EN 1276, EN 1656, EN 13727, EN 13697, EN 14561, EN 14349, EN 16437, ISO 16616	×
7931	<i>Enterobacter cloacae</i>	EN 1276, EN 13697	×
7932	<i>Lactobacillus brevis</i>	EN 1276, EN 13697	×
7933	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	EN 1276, EN 13697	×
7934	<i>Bacillus cereus</i>	EN 14347, EN 13704	×
7936	<i>Clostridium sporogenes</i>	EN 13704	×
8191	<i>Saccharomyces cerevisiae</i>	EN 1650, EN 13697	✓
8215	<i>Candida albicans</i>	EN 1650, EN 1275, EN 1657, EN 13624, EN 13697, EN 14562, EN 16438, ISO 16616	✓
8222	<i>Aspergillus brasiliensis</i>	EN 1650, EN 1275, EN 1657, EN 13624, EN 13697, EN 14562, EN 16438, ISO 16616	✓
8381	<i>Saccharomyces cerevisiae</i>	EN 1650, EN 13697	×

## Ophthalmic optics - Contact lens care products

CCM	Species	Detailed Specifications	GD
1961	<i>Pseudomonas aeruginosa</i>	ČSN EN ISO 14730	✓
4516	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	ČSN EN ISO 14730	✓
4517	<i>Escherichia coli</i>	ČSN EN ISO 14730	✓
8215	<i>Candida albicans</i>	ČSN EN ISO 14730	✓
8222	<i>Aspergillus brasiliensis</i>	ČSN EN ISO 14730	✓

### Detection of genotoxic substances

CCM	Species	GD
3807	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3808	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3809	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3810	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3811	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3812	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3814	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3815	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3816	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3817	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3818	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
3819	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x
4751	<i>Escherichia coli</i>	x
4763	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	x

### Monitoring the effectiveness of germicidal lamps

CCM	Species	GD
4684	<i>Serratia rubidaea</i>	✓

### Antimicrobial susceptibility testing

CLSI:

CCM	Species	GD
3953	<i>Staphylococcus aureus</i>	✓
3954	<i>Escherichia coli</i>	✓
3955	<i>Pseudomonas aeruginosa</i>	✓
4223	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	✓
4224	<i>Enterococcus faecalis</i>	✓
4225	<i>Escherichia coli</i>	✓
4435	<i>Clostridium perfringens</i>	✓
4456	<i>Haemophilus influenzae</i>	✓
4457	<i>Haemophilus influenzae</i>	✓
4500	<i>Neisseria gonorrhoeae</i>	x
4501	<i>Streptococcus pneumoniae</i>	✓
4647	<i>Enterococcus faecalis</i>	✓
4712	<i>Bacteroides fragilis</i>	x
4713	<i>Bacteroides thetaiotaomicron</i>	x
4714	<i>Eggerthella lenta</i>	x
4750	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	✓
4985	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	✓

EUCAST:

CCM	Species	GD
3954	<i>Escherichia coli</i>	✓
3955	<i>Pseudomonas aeruginosa</i>	✓
4223	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	✓
4224	<i>Enterococcus faecalis</i>	✓
4225	<i>Escherichia coli</i>	✓
4456	<i>Haemophilus influenzae</i>	✓
4457	<i>Haemophilus influenzae</i>	✓
4501	<i>Streptococcus pneumoniae</i>	✓
4647	<i>Enterococcus faecalis</i>	✓
4985	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	✓
6214	<i>Campylobacter jejuni</i> subsp. <i>jejuni</i>	✓
8260	<i>Candida parapsilosis</i>	✓
8271	<i>Candida krusei</i>	✓
8874	<i>Escherichia coli</i>	x

## Clinical Microbiology

### 1. Media testing - mycology

CCM	Species	GD
3953	<i>Staphylococcus aureus</i>	✓
3954	<i>Escherichia coli</i>	✓
8189	<i>Aspergillus niger</i>	✓
8191	<i>Saccharomyces cerevisiae</i>	✓
8215	<i>Candida albicans</i>	✓

CCM	Species	GD
8222	<i>Aspergillus brasiliensis</i>	✓
8223	<i>Candida tropicalis</i>	✓
8270	<i>Candida glabrata</i>	✓
8271	<i>Candida krusei</i>	✓
8377	<i>Trichophyton interdigitale</i>	✓

### 2. Media testing - bacteriology

CCM	Species	GD
1799	<i>Proteus</i> sp.	✓
1828	<i>Lactacaseibacillus rhamnosus</i>	✓
1903	<i>Enterobacter cloacae</i> subsp. <i>cloacae</i>	✓
1999	<i>Bacillus spizizenii</i>	✓
2010	<i>Bacillus cereus</i>	✓
2423	<i>Enterococcus hirae</i>	✓
3790	<i>Peptostreptococcus anaerobius</i>	x
3953	<i>Staphylococcus aureus</i>	✓
3954	<i>Escherichia coli</i>	✓
3955	<i>Pseudomonas aeruginosa</i>	✓
3593	<i>Clostridoides difficile</i>	x
4030	<i>Listeria innocua</i>	✓
4224	<i>Enterococcus faecalis</i>	✓
4409	<i>Clostridium sporogenes</i>	✓
4416	<i>Bordetella bronchiseptica</i>	x
4418	<i>Staphylococcus epidermidis</i>	✓
4420	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Enteritidis	✓
4422	<i>Shigella flexneri</i>	✓

CCM	Species	GD
4424	<i>Streptococcus pneumoniae</i>	✓
4425	<i>Streptococcus pyogenes</i>	✓
4435	<i>Clostridium perfringens</i>	✓
4502	<i>Streptococcus pneumoniae</i>	x
4699	<i>Listeria monocytogenes</i>	✓
4712	<i>Bacteroides fragilis</i>	x
4787	<i>Escherichia coli</i> (O157 avirulent)	x
4833	<i>Lactobacillus acidophilus</i>	x
4991	<i>Clostridium perfringens</i>	✓
5671	<i>Yersinia enterocolitica</i>	✓
5884	<i>Listeria ivanovii</i>	✓
5937	<i>Vibrio parahaemolyticus</i>	✓
7000	<i>Enterococcus faecalis</i>	✓
7188	<i>Proteus mirabilis</i>	x
7205	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	✓
7212	<i>Campylobacter jejuni</i> subsp. <i>jejuni</i>	✓
7232	<i>Aeromonas hydrophila</i> subsp. <i>hydrophila</i>	x
7418	<i>Streptococcus pyogenes</i>	x

### 3. Quality control of diagnostic tests

CCM	Species	Detailed Specifications	GD
303	<i>Serratia marcescens</i> subsp. <i>marcescens</i>	ENTEROtest 16, ENTEROtest 24, ENTERO-Rapid 24, COLItest, mCOLItest	✓
883	<i>Staphylococcus saprophyticus</i> subsp. <i>saprophyticus</i>	Phosphatase, Novobiocin resistance	x
1799	<i>Proteus</i> sp.	Phenylalanine deaminase, ENTEROtest 16, ENTEROtest 24, ENTEROtest 24N, ENTERO-Rapid 24, ONPG, E-Screen, GN24	✓
1828	<i>Lactacaseibacillus rhamnosus</i>	ANAEROtest 23	✓
1875	<i>Enterococcus faecalis</i>	STREPTOtest 24	x
1903	<i>Enterobacter cloacae</i> subsp. <i>cloacae</i>	Decarboxylase-Dihydrolase tests, ENTEROtest 24, ENTEROtest 24N, ENTERO-Rapid 24, Simmons citrate, OFtest, E-Screen	✓
1914	<i>Aerococcus viridans</i>	Leucine Aminopeptidase test (LAP)	x
1960	<i>Pseudomonas aeruginosa</i>	Acetamide and Gelatin hydrolysis, NEFERMtest 24, Gluconate oxidation test, Temperature tolerance test, OXItest, mOXItest, ITEST ONPG	✓
2010	<i>Bacillus cereus</i>	Lecithinase (Egg-yolk agar)	✓
2013	<i>Bacillus coagulans</i>	Temperature tolerance test	x
2115	<i>Pseudomonas fluorescens</i>	Acetamide hydrolysis, Temperature tolerance test	x
2124	<i>Staphylococcus epidermidis</i>	Clumping factor, Coagulase test, Protein A, Slidex Staph Plus	x
2216	<i>Bacillus subtilis</i> subsp. <i>subtilis</i>	Casein and Starch hydrolysis tests	x
2238	<i>Edwardsiella tarda</i>	ENTEROtest16, ENTEROtest 24N, E-Screen	x
2318	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	Methyl red test	x
2697	<i>Kytococcus sedentarius</i>	STREPTOtest 24	x
2699	<i>Kytococcus sedentarius</i>	STAPHYtest 24, HIPPURATEtest, VPtest, BACITRACIN S	✓
3296	<i>Myroides odoratus</i>	NEFERMtest 24, NEFERMtest 24N	✓
3343	<i>Cutibacterium acnes</i>	ANAEROtest 23	✓

CCM	Species	Detailed Specifications	GD
3461	<i>Cronobacter sakazakii</i>	NEFERMtest 24, NEFERMtest 24N, ONPtest, OXltest, mOXltest, ITEST ONPG	✓
3572	<i>Staphylococcus gallinarum</i>	STAPHYtest 24, STAPHYtest16, ITEST: β-GLUKOSIDASE	✓
3659	<i>Enterococcus cecorum</i>	STREPTOtest 24, ENC8	×
3689	<i>Vibrio fluvialis</i>	O/129 Disk Susceptibility test	×
3919	<i>Burkholderia</i> sp.	NEFERMtest 24, NEFERMtest 24N, OFtest	✓
3953	<i>Staphylococcus aureus</i>	Phosphatase, Catalase, Clumping factor, Coagulase test, KOH test, Motility, Protein A, Novobiocin resistance, NITROCEFAN, β-LACTAMtest, Slidex Staphy Plus, ITEST Staphy-coagulase, GP24	✓
3954	<i>Escherichia coli</i>	Phenylalanine deaminase, E-test, Gelatin hydrolysis, Indol, King B (fluorescein), Lecithinase (Egg-yolk agar), Methyl red test, ONPG, Oxidase, Motility, Nitrate reduction, Simmons citrate, Triple Sugar Iron Agar (TSI), Urea Christensen Agar, Acetamide utilization, Malonate test, Voges-Proskauer test (acetoin), MIC G-I, MIC G-II, MIC NEFERM, MIC URINE, MIC monostrip	✓
3955	<i>Pseudomonas aeruginosa</i>	E-test, Esculine hydrolysis, Indol, King B (fluorescein), OF test, Oxidase, Nitrate reduction, Triple Sugar Iron Agar (TSI), Acetamide utilization, GP 24, MIC NEFERM, MIC monostrip, GN24	✓
3988	<i>Escherichia coli</i>	ENTERO-Rapid 24, KOH test, COLltest, mCOLltest, ITEST:ENTERO H3	✓
4043	<i>Streptococcus constellatus</i> subsp. <i>constellatus</i>	Optochin susceptibility test	✓
4047	<i>Streptococcus sanguinis</i>	6.5 % salt tolerance test, STREPTOtest 24, Bile-esculin test	
4069	<i>Staphylococcus lugdunensis</i>	STAPHYtest 24, STAPHYtest 16	✓
4216	<i>Enterococcus raffinosus</i>	STREPTOtest 24, EN-COCCUStest, ENC8	✓
4223	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	E-test, Oxacillin susceptibility test, NITROCEFAN, VP, MIC STAPHY, MIC monostrip	✓
4224	<i>Enterococcus faecalis</i>	E-test, Leucine Aminoptidase test (LAP), Vancomycin susceptibility test (enterococci), 6.5 % salt tolerance test, Bile-esculin test, PYRAtest, ITEST PYRtest, GP24, ENC8, MIC G+, MIC monostrip	✓
4225	<i>Escherichia coli</i>	Beta-glucuronidase, E-test, Casein and Starch hydrolysis, Gluconate oxidation, ENTEROtest 24N, INDOLtest, GN24, COLI, ONP, MIC G-I, MIC G-II, MIC NEFERM, MIC URINE, MIC monostrip	✓
4415	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	OF test, Voges-Proskauer test (acetoin)	✓
4418	<i>Staphylococcus epidermidis</i>	STAPHYtest 24, NOVOBIOICIN, ITEST: Staphy-coagulase	✓
4420	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Enteritidis	ENTEROtest 24, ENTEROtest 24N, Triple Sugar Iron Agar (TSI)	✓
4422	<i>Shigella flexneri</i>	Triple Sugar Iron Agar (TSI)	✓
4456	<i>Haemophilus influenzae</i>	E-test	✓
4457	<i>Haemophilus influenzae</i>	E-test, Bacitracin H susceptibility test, BACITRACIN 10UI, X,V,X+V factor	✓
4500	<i>Neisseria gonorrhoeae</i>	E-test	×
4501	<i>Streptococcus pneumoniae</i>	E-test, Optochin susceptibility test, BACITRACIN 10UI, VK DISK, ITEST: Bacitracin H, MIC monostrip	✓
4611	<i>Paenicostridium sordellii</i>	ANAEROtest 23	✓
4647	<i>Enterococcus faecalis</i>	E-test, Vancomycin susceptibility test (enterococci)	✓
4657	<i>Mammaliococcus sciuri</i>	STAPHYtest 24	×
4710	<i>Staphylococcus pseudintermedius</i>	CAMP test	✓
4750	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	Oxacillin susceptibility test	✓
4985	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	Beta-glucuronidase, Decarboxylase-Dihydrolase tests, Malonate utilization	✓
5581	<i>Acinetobacter lwoffii</i>	OF test, Nitrate reduction	×
5852	<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	ENTEROtest 24N, GN24, GP24	×
6051	<i>Aggregatibacter aphrophilus</i>	V factor	×
6055	<i>Canicola haemoglobinophilus</i>	X factor	×
6187	<i>Streptococcus agalactiae</i>	CAMP test, Hippurate hydrolysis, PYR	✓
7000	<i>Enterococcus faecalis</i>	PYR	✓
7011	<i>Proteus hauseri</i>	Urea Christensen Agar	×
7046	<i>Staphylococcus nepalensis</i>	STAPHYtest 24	×
7205	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Typhimurium	Urea Christensen Agar	✓
7232	<i>Aeromonas hydrophila</i> subsp. <i>hydrophila</i>	Esculin hydrolysis, O/129 Disk Susceptibility test	×
7418	<i>Streptococcus pyogenes</i>	CAMP test, Hippurate hydrolysis, Catalase, Bacitracin H susceptibility test	×



#### 4. Differential diagnostic in clinical microbiology

(Scharfen, J. 2013. Diferenciální diagnostika v klinické mikrobiologii, Nucleus HK, Hradec Králové)

##### Growth media and antibiotic testing

CCM	Species	GD
3954	<i>Escherichia coli</i>	✓
3988	<i>Escherichia coli</i>	✓
3953	<i>Staphylococcus aureus</i>	✓
2107	<i>Staphylococcus aureus</i> subsp. <i>aureus</i>	x
4501	<i>Streptococcus pneumoniae</i>	✓
4224	<i>Enterococcus faecalis</i>	✓
3989	<i>Pseudomonas aeruginosa</i>	x
4456	<i>Haemophilus influenzae</i>	✓
4500	<i>Neisseria gonorrhoeae</i>	x
4712	<i>Bacteroides fragilis</i>	x
4713	<i>Bacteroides thetaiotaomicron</i>	x
8247	<i>Clostridium perfringens</i>	x

##### β-lactamase detection by nitrocefin method

CCM	Species	GD
4456	<i>Haemophilus influenzae</i>	✓
4500	<i>Neisseria gonorrhoeae</i>	x

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Brno 8/2022