

## The key for determining common culturable bacteria and yeast

**The initial situation:** unknown strain grew up on blood OR Endo OR chocolate agar under aerobic conditions in 24 hours.

1. What is the colour of the organism in Gram staining?

Violet – 2

Red – 13

2. What is the shape and size of the critter in the gastrointestinal?

Coccus – 3

Rod – 11

Yeast – 12

3. When he removes a few colonies and mixed with hydrogen peroxide (catalase):

makes bubbles, the bacteria also grow on the medium with 10% NaCl – 4

no bubbles, the bacteria also grow do not grow on the medium with 10% NaCl – 5

4. More tests

Clumping factor / coagulase / hyaluronidase is

positive – *Staphylococcus aureus*

negative – coagulase negative *Staphylococcus* (possible additional differentiation with STAPHYtest)

5. (3) the bacteria on the Slanetz Bartley and bile-asculin medium

do not grow, PYR test is negative, or the bacteria have small colonies with very strong haemolysis – 6

grows, PYR test is positive and it's not about the case described above – 10

6. the bacteria on sheep blood agar exhibit

viridation – 7

hemolysis – 8

no effect – alpha-haemolytic (gamma-haemolytic) *Streptococcus*

7. Optochin test is

positive, the bacteria are microscopically lancet-shaped diplococci with coin shaped colonies – *Streptococcus pneumoniae*

bacteria have another negative, the morphology of the microscopic and culture – oral streptococci (possible additional resolution STREPTOtestem)

8. (6) the PYR test and bacitracin test are

positive – *Streptococcus pyogenes*

negative – 9

9. CAMP test is

positive – *Streptococcus agalactiae*

negative – non-alpha and non-B-hemolytic *Streptococcus* (possible additional resolution with agglutination)

10. (5) the arabinose test is

positive – *Enterococcus faecium*

negative – *Enterococcus faecalis*

(more accurate distinction is possible ENCOCCUS)

11. (2) the appearance of the rods is:

robust, spore-forming, in cultivation felt-like – *Bacillus* sp.  
tinier, chains, in cultivation similar to the enterococci or streptococci – *Listeria* sp.  
pleomorph rods in palisades, in cultivation small whitish colonies – *Corynebacterium* sp.

12. (2) on the medium of the chromogenic Candida is  
green – *Candida albicans*  
blue – *Candida tropicalis*  
purple rough – *Candida krusei*  
purple smooth – *Candida glabrata*  
other – *Candida* sp., more determination possible for example by Auxacolor

13. (1) What is the shape of the organism in Gram staining?  
Coccus – 14  
Rod – 18

14. Oxidase positive?  
yes – 15  
not – probably *Acinetobacter* sp.

15. positive INAC (indoxylacetate) test?  
yes – *Moraxella (Branhamella) catarrhalis*  
no – 16

16. Does it grow on ordinary blood agar?  
yes – oral neisseria (specification possible by NEISSERIA test)  
not – 17

17. Does it grow on enriched sheep blood agar?  
yes, breaks down glucose and maltose – *N. meningitidis*  
not, only breaks down glucose – *N. gonorrhoeae*  
(For being sure, also for *N. meningitidis* and *N. gonorrhoeae* use of NEISSERIA test is very useful.)

18. (13) does it grow on Endo agar?  
yes – 19  
no – 22

19. Changing the colour of Hajna medium? (Fermenting glucose?)  
yes – 20  
no – 21

20. Oxidase test is positive?  
yes – the family *Vibrionaceae*, resolution with ENTERO test with special system  
not – the family Enterobacteriaceae, resolution using ENTERO test and cultivation on different media  
(swarming growth is typical for *Proteus*, growth with a black centre on XLD and MAL – typical for *Salmonella*)

21. (19) How the colonies look like?  
green, smells like jasmine/strawberries, oxidase positive – *Pseudomonas aeruginosa*  
not green, does not smell like jasmine/strawberries, it may or may not be oxidase positive – G– non-fermenters  
other than *Pseudomonas aeruginosa*, or atypical strains of *P. aeruginosa* (resolution using NEFERM test 24)

22. (18) the typical characteristics of the bacteria

curved, only grow on special media (so do not correspond to „Initial situation“ ☺), motile – *Campylobacter* and *Helicobacter*

specific "hemophili-like bad smell" – 23

different look – for example *Bordetella* or other fastidious rods, usually need for suspicion for an infection, and the use of special medium

23. On blood agar

it does grow – *Pasteurella* sp.,

it does not grow – 24

24. Requires the

X-factor – *Haemophilus aphrophilus*

V-factor – *Haemophilus parainfluenzae*

Both factors – *Haemophilus influenzae*