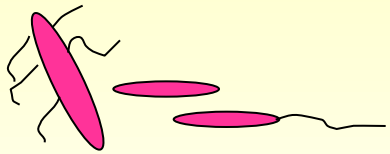
Enterobacteria



G-rods, facultative anaerobe, O (body), H (flagellate), K (fimbrial) antigens, many are comensals in intestine but some are potential pathogens

Factors of virulence: Endotoxin, fimbrias, exotoxins

Lab. detection: cultivation on BA/Endo, chromogennous media, biochemistry (enterotest), antigennous analysis, in addition to intestinal infections we also do ATB susceptibility testing

Transport: often fecal-oral

Therapy: cefalosporins, fluoroquinolons, aminopenicillins, carbapenems etc.

Yersinia

Y. pestis
immobile
Causes 3 forms of pest:
1. bubonic pest (hit only regional lymphatic nodes)
Transducer: flea *Xenopsilla cheopis*,
2. pulmonary form - aspiration of the dust by ill-nursing
3. septic form

Y. enterocolitica
apendicitis-like syndrome, growth on **CIN medium in cold**, **urease+**

Salmonella sp.

***Salmonella* typhi**

septic fever and headache, pink spots on the skin, alive in gallblader

Detection: direct – from blood and urine, agglutination, indirect – Widal reaction proof of antibodies

Therapy: fluoroquinolons, chloramphenicol, cholecystectomy in vectors is used

Primary zoopathogennous salmonellas (*S. enteritidis* etc...)

Biochemistry: production of H2S (hydrogen sulfide), disunite mannitol

Cultivation and detection: lactosis negative colonies on ENDO, on XLD/MAL/DC - **black** colonies, agglutination, multiply in selenite broth

Pathogenicity: diarrhoea

Source: domestic birds, eggs, salad cream, ice...

Therapy: ATB are not indicated, we use sauerkraut, yogurt, keep hygiene rules

Genus *Shigella (Sh. flexneri, sonnei, boydii, dysenteriae)*

immobile, causes watery diarrhoea with tenesm, blood in stool

Epidemies from water sources – camps, social care institutes

Therapy: fluids

Escherichia coli

Saprophyte in intestine, patogennous are only these, with specific factors of virulence, these are divided into groups:

EPEC (enteropatogennous) - diarrhoea in children do 2 let, serotypes like O55, O126 // known as Pharaoh revenge

ETEC (enterotoxigennous) – cause travel diarrhoea

EIEC (enteroinvazive) – bloody diarrhoea

VTEC/EHEC (verotoxigennous, enterohemoragic) – intestinal bleeding, hemolytical-uremic syndrom. Most common serotype O157

Out of intestine can cause urinary tract infections, wound infections etc.

Diagnostic: growth on ENDO -typical metal shine, lactose positive, form indol, pyr test negative, agglutination is needed in special cases

Therapy: susceptible to many antibiotics including ampicillin

Genus *Enterobacter*	**Genus *Klebsiella***
Mobile	immobile
resistance to ampi,	res. only to ampicillin
cefalosporins I. and II. gen.	
Urease -	urease +

Pathogenicity: similar: urinary infections, pulmonary infections, sepsis, ability to form extended spectrum β-lactamase (ESBL), therapy: carbapenems only

Serratia marcescens

Nosocomial infections, heteroresistance to colistin

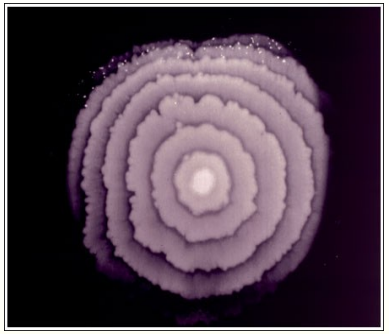
Genus *Proteus*

Cultivation: crawl in waves on medium - Rouss phenomenon

Biochemistry active, smell, urease +, in additon to *P. mirabilis* form indol

Pathogenicity: wound/urinary infections

Therapy: primary resistance to nitrofurantoin and colistin



Genus *Citrobacter*

looks like salmonella, can form **black** colonies on XLD, ONP+ and PYR test+

G- micro-aerophile rods

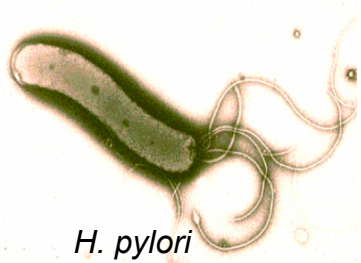
Campylobacter jejuni

Microscopy: G-bent rods
Cultivation: spec. medium with carbon
Grey colonies with metal shine
cultivation via 42˚C 48 hours
Biochemistry + resistance:
oxidase, catalase
Resistant to cefalotin
Susceptibility to nalidix acid
Patogenicity: diarrhoea
Therapy:
without therapy/hard infections - macrolides

Helicobacter pylori

G-curved rods
2 media: Thayer-Martin medium + control medium
little transparent colonies like haemophillus
5 day cultivation

oxidase, catalase, urease
S to cefalotin
R to nalidix acid
gastritis to gastric ulcer


H. pylori

3combin.
amoxic.+metronidazol+bismut
amoxicillin+claritromycin+omeprazol

Genus *Vibrio*

Live in water, better grow i presence of NaCl (halophilic) + grow also in alcalic pH, susceptible to vibriostatic compound, after drop of deochycholate sodium form string (string test), oxidase

V. cholerae

Microscopy: G- curved rods, with flagellum

Due to O antigen we distinguish 155 serotypes. Most common are O1 (El Tor and classic type), O139, non O1/O139 - NAG (nonagglutinable) vibria

Pathogenicity: diarrhoea looking like rice soup, vomitting

Therapy: rehydratation + chloramphenicol

Diagnostic: cultivation on TCBS agar - **green** colonies, membrane in alcalic pepton water, detection of serotype with help of the agglutination

Other vibria

Cause diarrhoea, wound infections

Aeromonas

negative string test

Not susceptible to vibriostatic compound

Cause diarrhoea, on TCŽS form yellow colonies