



UNIVERSIDAD AUTÓNOMA DE SAN LUIS POTOSÍ

FACULTAD DE CIENCIAS QUÍMICAS

Laboratorio de Microbiología

Case of hemorrhagic colitis caused by *Escherichia coli* O157:H7

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Grupo: 9:00 – 10:00

OBJECTIVE

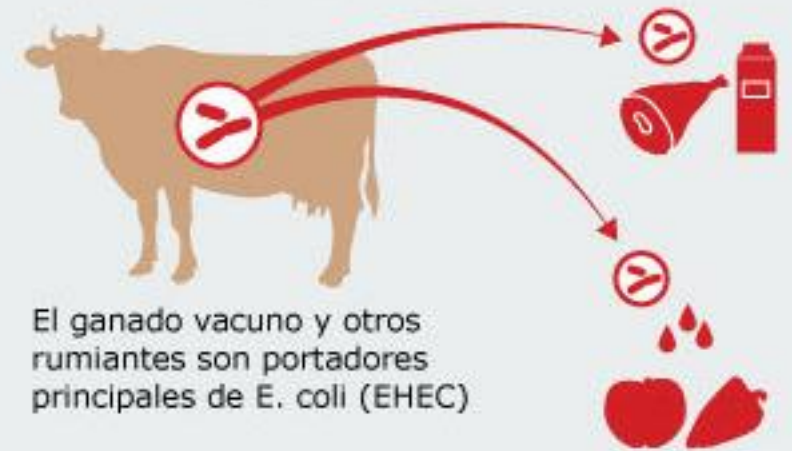
- Present a clinical case about the bacterium *Escherichia coli* and the specified treatment for recovery of the patient's health.
- Show results of biochemical tests performed on this bacterium and the sensitivity to antibiotics used in the laboratory.

INTRODUCTION

- ✓ Escherichia coli is a **Gram negative bacillus** belonging to the **Enterobacteriaceae family** which is found in the gastrointestinal tract of humans and animals.
- ✓ The **E. coli enterohemorrhagic** possess additional virulence factors, what gives them the ability to cause hemorrhagic colitis, diarrhea, nausea, fever and hemolytic uremic syndrome (HUS) in humans.



FUENTES DE INFECCIÓN

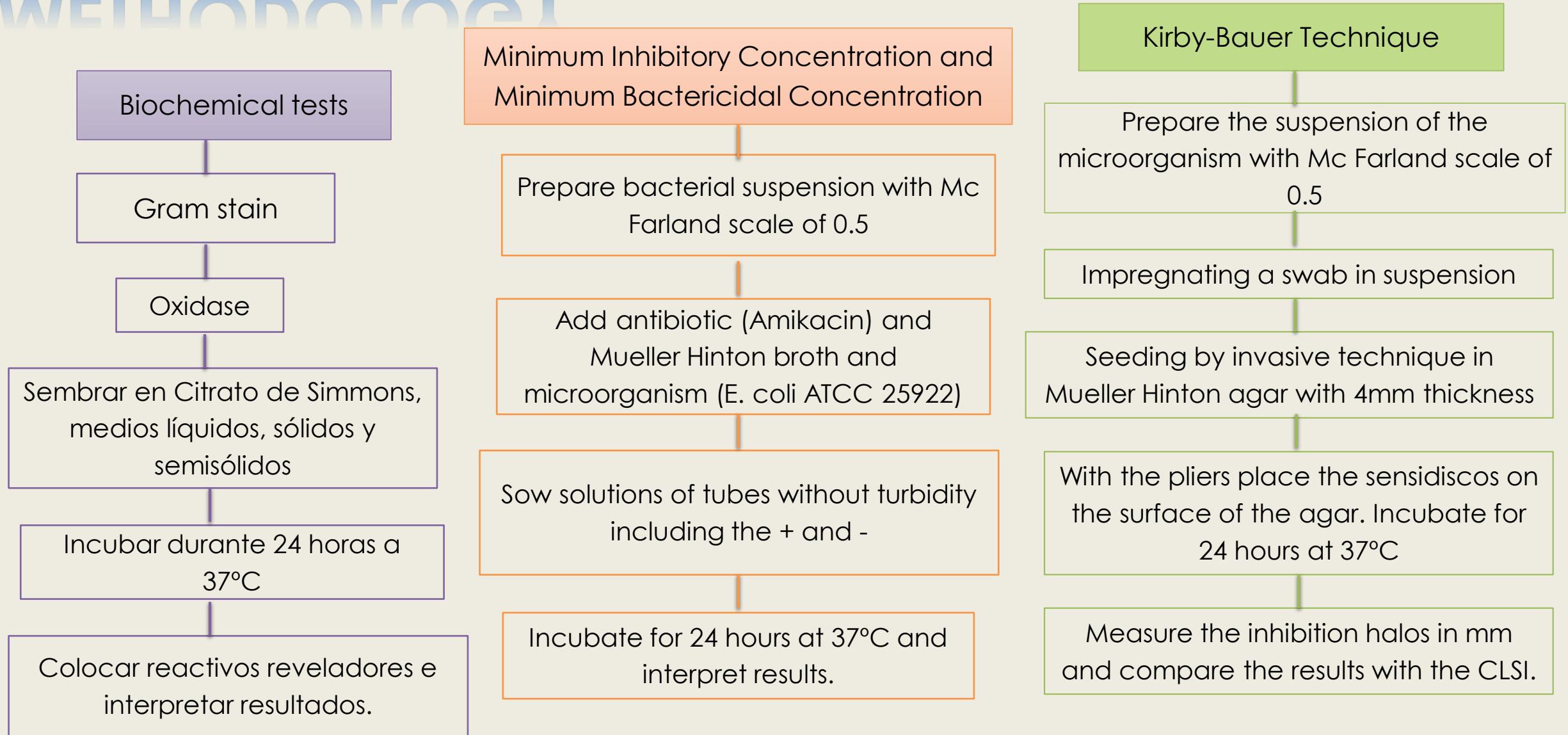


CLINIC CASE

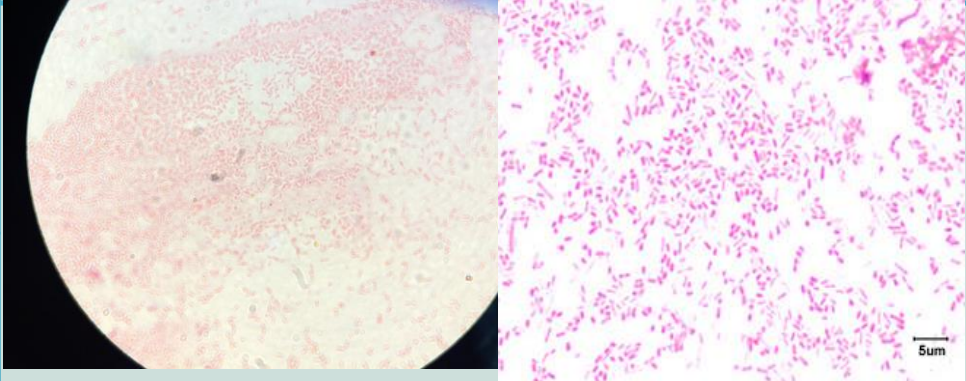
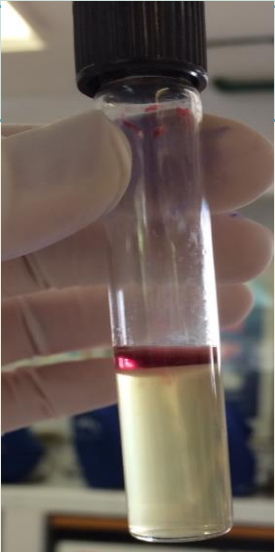
- Three-year-old child, previously healthy, entered with diarrheal stools without special features for two days and continued vomiting.
- Step to perform a stool culture, where identified **EHEC O157: H7**.
- Gravity began treatment with **cefotaxime** and **metronidazole**.
- The diagnosis of HUS was raised, peritoneal dialysis was installed, red blood cells were transfused and parenteral nutrition was initiated.
- At 48 hours a Tenckhoff catheter was installed, which gave rise to abundant citrus liquid.
- Bowel movements and abdominal distention were improved, thereafter evolved favorably and was discharged, in good condition, 21 days of evolution.



METHODOLOGY

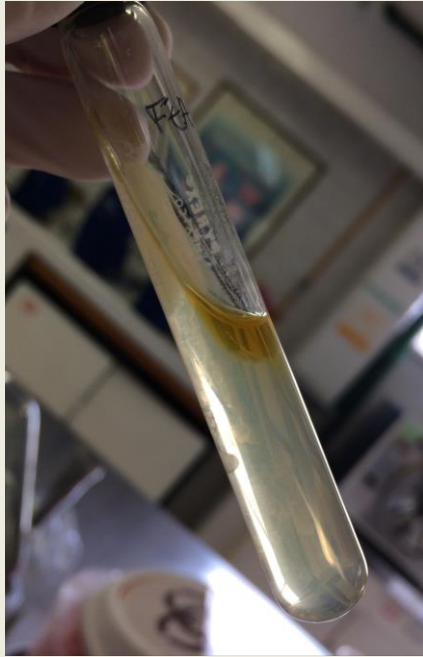


RESULTS

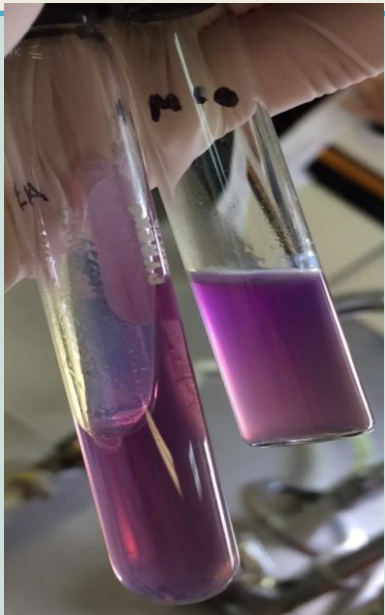
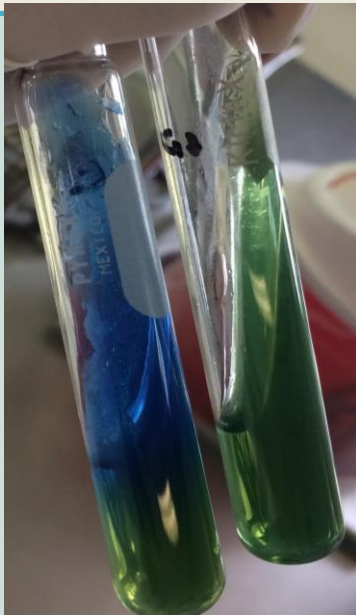
Proof	Result	Image
Gram stain	Gram negative bacillus	
Oxidase	(-) indicates that it is an Enterobacteria	
Biochemical tests		
Indole	(+) presence of red coloration.	
Mobility	(+) some turbidity is observed in the medium.	
Hydrogen sulfide	(-) no change of color in the medium.	

Phenylalanine deaminase	(-) the yellow color remains, without any change.
Methyl red	(+) show red color.
Vogues Proskauer	(-) didn't show color change when adding the reagent
Simmons Citrate	(-) remains the same color.
Lysine decarboxylase	(+) presents the purple color throughout the medium.
Ornithine decarboxylase	(+) presents the purple color throughout the medium.
Malonate	(-) no change in the medium.

(1)



(2)



Urea	(-) doesn't change to color pink.
D-glucose gas	(+) at the bottom of the tube the tube is slightly detached.
Lactose	(+) it was possible to observe a little pink coloration at the top.
KCN	(-) no changes in color.



Minimum Inhibitory Concentration and Minimum Bactericidal Concentration



CMI = 8 $\mu\text{g/ml}$
CMB = 8 $\mu\text{g/ml}$

Sensitivity tests

Group	Name	Diameter	Sensitive, intermediate or resistant
O	Ofloxacin (OFX)	27 mm	Sensitive
B	Vancomycin (VA)	0 mm	Resistant
C	Ceftriaxone (CRO)	23 mm	Sensitive
A	Gentamicin (GM)	24 mm	Sensitive
A	Tobramycin (NN)	16 mm	Sensitive



CONCLUSION

- ✦ It is important to perform the different biochemical tests to realize the characteristics that each bacteria possess and based on what is obtained to be able to determine how the metabolic activity works and what enzymes presents.
- ✦ With the results obtained it was identified that *Escherichia coli* is a gram-negative bacillus, and some antibiotics to which it is sensitive are: Ofloxacin, Tobramycin, Gentamicin and Ceftriaxone. While it has a strong resistance to the antibiotic Vancomycin.

BIBLIOGRAPHY

- Iowa State University. E.Coli enterohemorrágica [Monography on the Internet]. Iowa: The Center for Food Security & Public Health; 2009. [accesado 19 de Marzo del 2017]. Disponible en: http://www.cfsph.iastate.edu/Factsheets/es/ecoli_enterohemorrhagica.pdf
- Emilfork M,-Hannig K. Colitis hemorrágica por Escherichia coli enterohemorrágica O157 H:7. Revista chilena de pediatría. Mayo;1999.[accesado el 19 de Marzo del 2017]. Disponible en: http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0370-41061999000300008
- **CLSI**. Performance Standandars for Antimicrobial Susceptibility Testing; Twentieth Informational Supplement. USA2015.