Enterobacteriaceae

Enterobacteriaceae is a large family of Gram-negative bacteria. It was first proposed by Rahn in 1936, and now includes over 30 genera and more than 100 species such as Salmonella, Escherichia coli, Yersinia pestis, Klebsiella and Shigella. Other disease-causing bacteria in this family include Proteus, Enterobacter, Serratia, and Citrobacter. This family is the only representative in the order Enterobacteriales of the class Gammaproteobacteria in the phylum Proteobacteria.

Phylogenetically, in the Enterobacteriales, several peptidoglycan-less insect endosymbionts form a sister clade to the Enterobacteriaceae, but as they are not validly described, this group is not officially a taxon; examples of these species are Sodalis, Buchnera, Wigglesworthia, Baumannia cicadellinicola and Blochmannia, but not former Rickettsias.

Members of the Enterobacteriaceae can be trivially referred to as enterobacteria or “enteric bacteria”, as several members live in the intestines of animals. In fact, the etymology of the family is enterobacterium with the suffix to designate a family (aceae) — not after the genus Enterobacter (which would be “Enterobacteraceae”)— and the type genus is Escherichia.

Enterobacteriaceae in neurosurgery

- Probiotic-mediated tumor microenvironment reprogramming with protease-sensitive interleukin-15 and photothermal therapy
- Precise Oligomer Organization Enhanced Electrostatic Interactions for Efficient Cell Membrane Binding
- First characterization of four repeat regions with the bla _{NDM-1} carried on an IncFII plasmid in Enterobacter hormaechei
- Postoperative Meningitis Caused by Multidrug-Resistant Pathogens: A Case Report
- Antimicrobial management of unresectable embolisation agent infection: A case report
- Molecular epidemiological analysis and research on resistance and virulence of carbapenem-resistant Klebsiella pneumoniae in a tertiary hospital from 2016 to 2023
- Injectable carboxymethyl chitosan/konjac glucomannan/catechin hydrogel with free radical-scavenging, antimicrobial, and pro-healing abilities for infected wound repair
- Monte Carlo simulation to optimize polymyxin B dosing regimens for the treatment of Gram-negative bacteremia

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Post-neurosurgical infection is a common complication of neurosurgery, and serious infection can threaten the life of patients. In recent years, the increase in multidrug-resistant bacteria, especially carbapenem-resistant Enterobacteriaceae (CRE), has proved fatal to patients. Although there are a few cases of CRE meningitis and few clinical trials have been carried out, it has attracted increasing attention with the increasing probability of its occurrence, especially considering that there are few successful cases. An increasing number of studies are also looking for the risk factors and clinical symptoms of CRE intracranial infection. In terms of treatment, some new antibiotics are gradually being used in the clinic, but due to the complicated drug-resistant mechanism of CRE and the obstruction of the blood-brain barrier (BBB), the therapeutic effect is still very poor. In addition, obstructive hydrocephalus and brain abscesses caused by CRE meningitis are still important causes of patient death and are also difficult to treat [1)]

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Li C, Zhou P, Liu Y, Zhang L. Treatment of Ventriculitis and Meningitis After Neurosurgery Caused by Carbapenem-Resistant Enterobacteriaceae (CRE): A Challenging Topic. Infect Drug Resist. 2023 Jun 15;16:3807-3818. doi: 10.2147/IDR.S416948. PMID: 37342434; PMCID: PMC10278654.