Antibody-Based Inhibition of Uropathogenic E. coli Adhesion

The technology offers innovative antibody compositions that target the FimH adhesin of uropathogenic E. coli, preventing bacterial adhesion and biofilm formation.

What is the Problem?

Urinary tract infections (UTIs) are among the most common bacterial infections globally, often caused by uropathogenic Escherichia coli (UPEC). These infections can lead to severe complications, especially in recurrent cases. Traditional antibiotic treatments are increasingly ineffective due to rising antibiotic resistance, necessitating alternative therapeutic strategies.

What is the Solution?

The technology involves monoclonal antibodies that target the mannose-binding FimH adhesin of UPEC. These antibodies exhibit parasteric inhibition, binding within the FimH binding pocket and displacing mannose non-competitively. This mechanism effectively blocks bacterial adhesion to the bladder epithelium, dissolves biofilms, and prevents infection. The antibodies have shown efficacy in preclinical models, protecting mice from urinary bladder infections.

What is the Competitive Advantage?

Non-Competitive Inhibition: Unlike traditional inhibitors, these antibodies bind adjacent to the ligand in the binding pocket, providing a unique and effective inhibition mechanism.

Biofilm Disruption: The antibodies not only prevent adhesion but also dissolve existing biofilms, addressing both prevention and treatment.

Antibiotic Resistance Mitigation: By offering a non-antibiotic approach, this technology helps combat the growing issue of antibiotic resistance.

Broad Applicability: The antibodies can be used against various enterobacteria, including Klebsiella species, expanding their potential use beyond UPEC.

Patent Information:

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References

Technology ID

BDP 7576

Category

Therapeutics/Infection
Selection of Available Technologies

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Learn more

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