

Second stage – LAB.11***Proteus* SPP.**

Species: . *Proteus vulgaris* UTI, wound infection
Proteus mirabilis UTI, wound infection, nosocomial infection
Proteus rettgeri Gastrointestinal tract
Proteus morganii now / *Morganella morganii* summer diarrhea

G-ve bacilli or coccobacilli, lactose non fermentor, pleomorphic, *Proteus* species move very actively by means of peritrichous flagella, resulting in "swarming" on solid media. non capsulated, non spore forming, facultative anaerobes, growth at 25-37°C, some are free living in water and sewage and even vegetable and soil. some are normal flora, pathogenic strains cause mainly UTI (species are relatively common causes of uncomplicated as well as nosocomial UTIs). Other extra intestinal infections, such as wound infections, pneumonias, and septicemias, are associated with compromised patients. *Proteus* organisms produce urease, which catalyzes the hydrolysis of urea to ammonia. The resulting alkaline environment promotes the precipitation of stones containing insoluble phosphates of magnesium and phosphate. Residual urine as well the rapid motility may contribute to invasion of UT. *Proteus mirabilis* is more susceptible to antimicrobial drugs, including penicillin's, than other members of the group.

Serological classification is not dependable because of the cross reactivity with *Rickettsia* (typhus fever), differentiation among *Proteus* biotypes(species) by carbohydrate fermentation.

Enzymes produced by *Proteus* are:

Proteolytic enzymes which are protease include gelatinase (liquification of gelatin), phenylalanine deaminase, urease and hemolysin

Types of Hemolysis of *Proteus* Spp. :

- 1- α –hemolysis: (partial hemolysis)
- 2- β – hemolysis: (complete hemolysis)
- 3- γ - hemolysis: (no hemolysis)
- 4- $\bar{\alpha}$ -hemolysis : between α and β , green and clear zone.

*highly sensitive to: piperacillin, cefotaxime and garamycin *drug of choice : piperacillin.