POTENTIAL PATHOGENIC FACTORS OF MORGANELLA MORGANII INVOLVED IN URINARY TRACT INFECTIONS

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Background: M. morganii is a Gram-negative bacterium causing mainly urinary tract infections, especially in long-term urethral catheterized patients. There is a few information about M. morganii virulence factors.

Objectives:

1. Determination of the fimbriae produced by 26 M. morganii strains, bacterial surface hydrophobicity and adhesion to polystyrene.
2. Investigation of urease and haemolytic activity of 26 M. morganii isolates.

Methods:

1. The MS, MR/K and MR/P fimbriae of M. morganii were determined in hemagglutination test.
2. Cell surface hydrophobicity was analysed with the salt aggregation test and Rosenberg method.
3. Adhesion of bacteria to polystyrene plate assays was examined with colorimetric method using the crystal violet.
4. The urease activity was defined with Weatherburn method.
5. Haemolytic activity was determined spectrophotometrically after incubation of bacteria or the broth-culture filtrates with sheep erythrocytes.

Results:

1. The MS, MR/K and MR/P fimbriae were produced by 19 M. morganii strains. The 3 strains did not produce studied hemagglutinins. The MS or/and MR/K fimbriae were produced by 4 strains.
2. The hydrophobic surface properties determined by SAT and Rosenberg method were exhibited by 58% and 27% of all strains, respectively.
3. The results of the adherence assays allowed us to divide M. morganii strains into 2 groups: first (17 strains) with OD_600 value 0 - 0.06 and second group (9 strains) - OD_600 above 0.06.
4. The average urease activity was 109.6 ± 32.7 units. 5. Taking into account expression of cell-bound and cell-free haemolysins one of 26 strains produced the first one and six strains the latter. Both haemolysins were produced by 7 strains.

Conclusions: This report shows that opportunistic Morganella morganii strains expressed virulence factors responsible for colonisation of urinary tract similar to other known uropathogens such as Proteus or E. coli.