

## Abstract

Previously studies indicated gargling egg yolk immunoglobulin Y antibodies targeting *Pseudomonas aeruginosa* (*P. aeruginosa*) might reduce chronic infections in patients with cystic fibrosis. Patients with spinal cord lesions (SPL) are in risk of developing chronic urinary tract infections (UTI). Chronic UTI mat form biofilm and become multidrug resistance (MDR). Using this as a basis, the effect of IgY antibodies was investigated in a novel mouse model. In a simulated UTI, 30 BALB/c female mice were used. The mice were injected with 10<sup>9</sup> CFU/mL *P. aeruginosa* O1 into the bladder through a temporary urethral catheter. The mice were randomized into four groups. One control group and three IgY antibody test groups. 10% IgY antibody suspension was used and injected into the mice through a temporary urethral catheter. The test groups were injected with IgY antibody on day 0, 1 or 3. Urine samples were collected daily and examined quantitatively by counting CFU/mL. On day 7, all the mice were killed. Bacteriology was performed on urine, bladder, kidneys and blood. Urine and bladder were examined quantitatively. Kidneys and blood were examined for  $\pm$ growth of *P. aeruginosa* O1. Quantitative examination of the cultures showed no major difference between the control group and the three test groups in urine and bladder. Mice injected with IgY antibodies on day 1, was shown to have a significant lower CFU/mL compared to the control group in urine cultures. In the control group, growth of *P. aeruginosa* O1 was found in the kidneys in five out of seven mice, compared with five out of 20 mice in the three test groups. The project indicates that IgY antibodies have a preventive effect on UTI caused by *P. aeruginosa* O1. The project shows that treatment with 10% IgY antibodies has an effect on CFU/mL in the early stage of infection with *P. aeruginosa* O1, also treatment with IgY antibodies has a preventive effect on *P. aeruginosa* pyelonephritis. Use of IgY antibodies appears to have a promising effect that may reduce UTI in patients with SCL and patients with urethral catheters.

## Indstilling

Sarah Bækdahl Petersen har udført et professionsbachelorprojekt med fokus på kateterbærende patienter med rygmarvsskader. Her ses hyppigt urinvejsinfektioner (UVI) med *Pseudomonas aeruginosa*, som kan udvikle biofilm og besværliggøre behandling. Sarah har undersøgt effekten af IgY-antistoffer i en simuleret urinvejsinfektion demonstreret i en muse-forsøgsmodel, som aldrig er afprøvet før. Sarah har formået at inddrage flere specialer i sit projekt, hvor Klinisk Patologi, Klinisk Immunologi samt Klinisk Mikrobiologi er repræsenteret. Globale klinisk relevante problematikker er belyst. Hun har arbejdet med ca. 850 undersøgelser, hvor størstedelen udgør fortyndinger af indsamlet urin fra mus. Med henblik på eventuelle systemiske infektioner, er musenes blærer, nyrer og blod også undersøgt. Sarah Bækdahl Petersen har vundet indstillingen af bachelorprojekt på Københavns Professionshøjskole. Ydermere har Sarah i samarbejde med KMA-forskning fået godkendt abstract til ECCMID 2020 -The European Society of Clinical Microbiology and Infectious Diseases.