

P0388 *In silico* studies, expression and assessment of iron receptor PMI0409 in *Proteus mirabilis* as a vaccine candidate against urinary tract infection in an animal modelMohammad Reza Asadi Karam*¹, Mehri Habibi¹, Saeid Bouzari¹¹ Pasteur Institute of Iran, Tehran, Iran

Background: *Proteus mirabilis* is among the most important causes of urinary tract infections (UTI) especially in complicated UTIs. Increasing rate of antibiotic resistance among the isolates will complicate future treatment of these infections, making the development of a vaccine more urgent. *Proteus mirabilis* applied different iron scavenger receptors for pathogenicity in the urinary tract. There is no study about the evaluation of iron adsorption receptor PMI0409 of *Proteus mirabilis* as a vaccine candidate. Thus, in this study we expressed and evaluated the efficacy of PMI0409 in *Proteus mirabilis* in animal model.

Materials/methods: In the present study, we planned to design a truncated form of antigen PMI0409. Thus, different bioinformatics software's were used to identify the immunogenic regions of this antigen. Then, the truncated form of *PMI0409* gene was amplified by PCR in a standard *Proteus mirabilis* and was cloned into the expression vector pET28a. This gene was expressed in BL21 (DE3) host and purified by nickel columns. The purified protein was analyzed by SDS-PAGE and Western blot. Mice were immunized subcutaneously with the protein. Then, serum and samples were collected for assessment the IgG and IgA responses by ELISA. Furthermore, the cytokine secretion was measured in the splenocytes of the vaccinated mice by ELISA.

Results: The *PMI0409* gene was expressed in BL21 host and produced protein with the size of approximately 45 KD. The purified protein significantly induced humoral responses IgG and IgA in serum of immunized mice than the control mice received PBS ($P < 0.05$). The vaccinated mice with PMI0409 also significantly enhanced the levels of cytokines IFN- γ and IL-4 than control mice ($P < 0.05$).

Conclusions: Iron scavenger receptors of *P. mirabilis* such as PMI0409 are expressed in surface of bacteria and are antigenic. Thus, these factors could present as ideal vaccine candidates against UTI. In the present study, a truncated form of iron receptor PMI0409 was developed and showed increased immune responses in a mice model that needs to further studies.

