I prefer:

□ ORAL presentation

☑ POSTER presentation

**Evaluation of twin arginine translocation system substrate proteins as potential antigen candidates for serodiagnosis of brucellosis**

Yao Wu1, Xin Yan1\*, Mingjun Sun1, Xiaohan Guo2, Jiaqi Li1, Xiangxiang Sun1, Mengda Liu1, Haobo Zhang1, Wenlong Nan1, Weixing Shao1, Fangkun Wang3, Xiaoxu Fan1, Shufang Sun1

\*lead presenter

1 Email:yanxin@cahec.cn, China Animal Health and Epidemiology Center, China

2 Xuzhou Medical University, China

3 Shandong Agricultural University, China

**Abstract:**

**Background/Objective:** Brucellosis, caused by members of genus Brucella, is a chronic multi organ injury zoonotic infectious disease. To improve the specificity and sensitivity of serological methods for diagnosing brucellosis, it is important to develop new diagnosis antigens. The twin-arginine translocation (Tat) pathway transports folded proteins across the cytoplasmic membrane and has been implicated in virulence in Brucella.

**Methods:** Three Tat substrate proteins, including L, D-transpeptidase ErfK (A0577), linear amide C-N hydrolase YxeI (A1479) and thioesterase domain-containing protein EntF (B0249) contribute significantly to Brucella virulence. However, the role of these Tat substrate proteins in the diagnosis of brucellosis is unclear. In this study, Three Tat substrate proteins ErfK, YxeI and EntF, were expressed in prokaryotic cells and utilized as diagnostic antigens. The clinical sera of bovine and sheep with brucellosis were analyzed by indirect ELISA using these proteins.

**Results:** In diagnosing bovine serum, the combined proteins group (ErfK + YxeI + EntF) and YxeI exhibited the highest diagnostic accuracy of 94.23% and 93.58%, respectively, while the combined proteins group exhibited the strongest ability to detect brucella in sheep serum with an accuracy of 88.10%.

**Conclusion:** The combined proteins group and YxeI showed no cross-reactivity to the rabbit sera immunized with Yersinia enterocolitica O9, Escherichia coli O157:H7, Vibrio cholerae, Legionella and Salmonella, displaying relatively good specificity. The results of this study indicate that Tat substrate proteins are candidate antigens with high potential application value in the clinical diagnosis of brucellosis.

**Keywords:** Brucella; twin-arginine protein translocation substrates; diagnosis; ELISA