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Cold-induced stress and *chlamydia* genital infection on a mouse model

Genital infection by *Chlamydia trachomatis* (CT) is the most common bacterial sexually transmitted disease worldwide. The infection can cause serious reproductive health complications including pelvic inflammatory disease and infertility. Stress is considered as a risk factor for various infections, however, its effect on chlamydia genital infection remains unknown. In this study, exposure of mice to cold water for five minutes every day for 24 days resulted in a greater intensity of *Chlamydia muridarum* genital infection and a high rate of infertility. Cold-induced stress was associated with decreased mRNA and protein levels of major cytokines and chemokines in the spleen and genital tract but with increased noradrenaline (NE) and adrenaline levels. Furthermore, supplement of NE *in vitro* exerted an immunosuppressive effect on splenic T-cell production of cytokines, but a decreased *C. muridarum* shedding in the genital tract of β 1Adr/ β 2Adr receptor knockout mice. These results suggest that cold-induced stress induces the production of catecholamines, which may play a critical role in the modulation of the immune system leading to increased susceptibility and greater intensity of *Chlamydia* genital infection that could promote the development of complications including *Chlamydia*-induced infertility in mice.

Biography

Dr. Tesfaye Belay is currently a professor of biology at Bluefield State College (BSC), WV. He earned a Bachelor of Science in biology from Addis Ababa University in Ethiopia and Masters of Science in microbiology and PhD in botany and plant pathology from Michigan State University. Before joining BSC in 2005, he served as postdoc at Georgia State University, Morehouse School of Medicine, Clark University and an adjunct instructor of biology at Morehouse College and Spelman College. He has authored and co-authored 27 articles that have appeared in many peer-reviewed scientific journals. He has trained more than 50 undergraduate students in basic biomedical research that have presented their research findings at both local and national meetings. He has won several awards including outstanding researcher award from all Thurgood Marshall Member institutions throughout the nation 2009, faculty of the year at BSC in 2015. Dr. Belay is a member of the American Society for Gravitational and Space Research, American Society for Microbiology, and the Association of American Immunologists.

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