

9<sup>th</sup> Edition of International Conference on **Environmental Science & Technology**  
&  
48<sup>th</sup> World Congress on **Microbiology**  
&  
50<sup>th</sup> International Congress on **Nursing Care**

June 24-25, 2019 Moscow, Russia

## Differential effects of depot medroxyprogesterone acetate administration on vaginal microbiome in hispanic white and black women

Liyang Yang<sup>1</sup>, Yuhan Hao<sup>1</sup>, Jiuyan Hu<sup>1</sup>, Dervla Kelly<sup>1</sup>, Huilin Li<sup>1</sup>, Stuart Brown<sup>1</sup>, Carley Tasker<sup>2</sup>, Natalie E Roche<sup>2</sup>, Theresa L Chang<sup>2</sup> and Zhiheng Pei<sup>1</sup>

<sup>1</sup>New York University School of Medicine, USA

<sup>2</sup>Rutgers New Jersey Medical School-Rutgers University, USA

**Background:** The use of depot medroxyprogesterone acetate (DMPA), a three monthly injectable hormonal contraceptive is associated with an increased risk of HIV acquisition possibly through alteration of the vaginal microbiome.

**Methodology & Theoretical Orientation:** In this longitudinal interventional study, we investigated the impact of DMPA administration on the vaginal microbiome in hispanic white and black women at the baseline (visit 1), one month (visit 2), and three months (visit 3) following DMPA treatment by using 16S rRNA gene sequencing.

**Findings:** No significant changes in the vaginal microbiome were observed after DMPA treatment when hispanic white and black women were analyzed as a combined group. However, DMPA treatment enriched total vaginosis associated bacteria (VNAB) and *Prevotella* at visit 2, and simplified the correlational network in the vaginal microbiome in black women, while increasing the network size in hispanic white women. The microbiome in black women became more diversified and contained more VNAB than hispanic white women after DMPA treatment. While the Firmicutes to Bacteroidetes (F/B) ratio and Lactobacillus to *Prevotella* (L/P) ratio were comparable between black and hispanic white women at visit 1, both ratios were lower in black women than in hispanic white women at visit 2.

**Conclusion & Significance:** DMPA treatment altered the community network and enriched VNAB in black women but not in hispanic white women. The Lactobacillus deficiency and enrichment of VNAB may contribute to the increased risk of HIV acquisition in black women. Future studies on the impact of racial differences on the risk of HIV acquisition will offer insights into developing effective strategies for HIV prevention.

### Recent Publications

1. Ralph L J, McCoy S I, Shiu K, Padian N S (2015) Does hormonal contraceptive use increase women's risk of HIV acquisition? A meta-analysis of observational studies. *Lancet Infect Dis.* 15(2):181-189.
2. Hapgood J P, Kaushic C and Hel Z (2018) Hormonal contraception and HIV-1 acquisition: biological mechanisms. *Endocr Rev.* 39(1):36-78.
3. Brooks J P, Edwards D J, Blithe D L, Fettweis J M, Serrano M G, Sheth N U, et al., (2017) Effects of combined oral contraceptives, depot medroxyprogesterone acetate and the levonorgestrel-releasing intrauterine system on the vaginal microbiome. *Contraception* 95(4):405-413.
4. Roxby A C, Fredricks D N, Odem-Davis K, Asbjornsdottir K, Masele L, Fiedler T L, et al., (2016) Changes in vaginal microbiota and immune mediators in HIV-1-seronegative Kenyan women initiating Depot Medroxyprogesterone Acetate. *J Acquir Immune Defic Syndr.* 71(4):359-366.

## JOINT EVENT

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### Biography

Liyang Yang is a Microbiologist with a major research focus on evaluating microbiome for cancer risk and disease etiology. She received her Medical Degree from Jiamusi Medical College where, she studied clinical medicine and Master of Science from New York University School of Dentistry with a major in Clinical Research. Currently, she is working as Assistant Professor in the Division of Translational Medicine at New York University School of Medicine. She has been directing three NIH sponsored projects, in which she found that colorectal cancer risk is associated with decreased bacterial diversity in faeces, depletion of fiber-fermenting Clostridia, and increased presence of pro-inflammatory genera Fusobacterium and Porphyromonas, the vaginal microbiome and immune system exhibit a striking racial/ethnic difference in the DMPA-mediated vaginal microbiome changes. Overall, she authored 40 scientific papers and 11 book chapters/reviews.

liyang.yang@nyumc.org

### Notes: