



## Correspondence

Reply to letter to editor: The supplement of *Lactobacillus* for women

Dear Editor,

We thank Dr Li and Dr Yeh for their interest and comments regarding our recently published manuscript: "Oral *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 to reduce Group B streptococcus colonization in pregnant women: a randomized controlled trial" [1].

The vaginal microenvironment is a dynamic ecosystem. *Lactobacillus* species play an important role in regulating factors such as pH, hydrogen dioxide, surfactant, and bacteriocin to inhibit potential pathogenesis in the female urogenital tract [2]. A *Lactobacillus*-dominated vaginal flora is generally considered healthy. The most prevalent vaginal lactobacilli are *Lactobacillus crispatus*, *Lactobacillus gasseri*, *Lactobacillus iners*, and *Lactobacillus jensenii* [3]. Each *Lactobacillus* species possesses unique proteins and may have specific functions of balancing vaginal flora [4]. In strain-specific respect, a genome-wide transcriptional analyses showed *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 can downregulate the biofilm formation and drug reflux pump-related gene expression of *Candida* [5].

It is commonly admitted that most effects of probiotics are strain-specific and cannot be extended to the same genus or species of other probiotics [6]. More clinical evidence is needed to identify the effectiveness of different *Lactobacillus* strains on reducing Group B streptococcus colonization in pregnant women. Several studies showed there are some associations between *Lactobacillus* strains and lower genital tract Group B streptococcus colonization [1,7–9]. However, the interaction of *Lactobacillus* strains with Group B streptococcus in the lower genital tract remains unclear and requires further work to understand the mechanism of action.

## Conflicts of interest

The authors have no conflict of interest relevant to this article.

## References

- [1] Ho M, Chang YY, Chang WC, Lin HC, Wang MH, Lin WC, et al. Oral *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 to reduce Group B

- streptococcus colonization in pregnant women: a randomized controlled trial. Taiwan J Obstet Gynecol 2016;55:515–8.
- [2] Huang B, Fettweis J, Brooks P, Jefferson K, Buck G. The changing landscape of the vaginal microbiome. Clin Lab Med 2014;34:747–61.
- [3] Pavlova SI, Kilic AO, Kilic SS, So JS, Nader-Macias ME, Simoes JA, et al. Genetic diversity of vaginal lactobacilli from women in different countries based on 16S rRNA gene sequences. J Appl Microbiol 2002;92:451–9.
- [4] Mendes-Soares H, Suzuki H, Hickey RJ, Forney LJ. Comparative functional genomics of *Lactobacillus* spp. reveals possible mechanisms for specialization of vaginal lactobacilli to their environment. J Bacteriol 2014;196:1458–70.
- [5] Köhler GA, Assefa S, Reid G. Probiotic interference of *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 with the opportunistic fungal pathogen *Candida albicans*. Infect Dis Obstet Gynecol 2012;2012:636474.
- [6] Fuller R. Probiotics in human medicine. Gut 1991;32:439–42.
- [7] Reid G, Charbonneau D, Gonzalez S, Gardiner G, Erb J, Bruce AW. Ability of *Lactobacillus* GR-1 and RC-14 to stimulate host defences and reduce gut translocation and infectivity of *Salmonella typhimurium*. Nutraceut Food 2002;7:168–73.
- [8] Altöparlak U, Kadanali A, Kadanali S. Genital flora in pregnancy and its association with group B streptococcal colonization. International J Gynecol Obstet 2004;87:245–6.
- [9] Velraeds MM, van der Belt-Gritter B, van der Mei HC, Reid G, Busscher HJ. Interference in initial adhesion of uropathogenic bacteria and yeasts to silicone rubber by a *Lactobacillus acidophilus* biosurfactant. J Med Microbiol 1998;47:1081–5.

Ming Ho\*, Yin-Yi Chang, Wei-Chun Chang  
Department of Obstetrics and Gynecology,  
China Medical University Hospital, China Medical University,  
Taichung, Taiwan

Hung-Chih Lin  
Department of Pediatrics, China Medical University Hospital,  
China Medical University, Taichung, Taiwan

Mei-Hung Wang, Wu-Chou Lin, Tsan-Hung Chiu  
Department of Obstetrics and Gynecology, China Medical University  
Hospital, China Medical University, Taichung, Taiwan

\* Corresponding author. Department of Obstetrics and Gynecology,  
China Medical University Hospital, China Medical University,  
Number 2, Yuh-Der Road, Taichung 404, Taiwan.  
E-mail address: [mi.ho@msa.hinet.net](mailto:mi.ho@msa.hinet.net) (M. Ho).