



Correspondence

Lactobacillus supplementation and Group B *Streptococcus* infection

Dear Editor,

We read the recent article by Ho et al [1] entitled “Oral *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 to reduce Group B *Streptococcus* colonization in pregnant women: a randomized controlled trial” published in the *Taiwanese Journal of Obstetrics and Gynecology* with interest. The authors reported the significant effectiveness of 3-week oral probiotics treatment containing *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 in reducing Group B *Streptococcus* (GBS) colonization in pregnant women in comparison with placebo treatment (42.9% vs. 18.0%, $p = 0.007$) [1]. We congratulate the success of the authors. This article is interesting and worth discussing.

First, *Lactobacillus* are a dominant species comprising the vaginal microbiota, which produce a substantial amount of lactic acid and hydrogen peroxide to maintain an acidic vaginal environment (pH 3.5–4.5) in healthy women [2]. The presence of *Lactobacillus* species is important because they can inhibit overgrowth of harmful microorganisms, such as GBS, *Escherichia coli*, *Staphylococcus aureus*, *Gardnerella vaginalis*, or other fastidious or uncultivated anaerobes [2], whose infections can often result in unwanted morbidity and mortality of pregnant women and their babies [3]. Many interventional efforts have been and are being made to restore vaginal health through the application of oral or vaginal probiotic formulations of *Lactobacillus* species [4], including a study published in the recent issue of the *Taiwanese Journal of Obstetrics and Gynecology* [1]. In addition, the benefits of restoring vaginal microbiomes in women are not only related to the health status of women themselves but also to obstetric outcomes when these women get pregnant. Therefore, it is not surprising that Dr Ho and colleagues [1] found that supplementation of probiotics containing *Lactobacillus* species might be beneficial for pregnant women infected by GBS.

However, there are many *Lactobacillus* species in the human vagina. In addition, there is a lack of scientific-level understanding on how the vaginal microbiota are associated with obstetric, gynecologic, and reproductive health [4]. Detailed information about *Lactobacillus* species in the vagina of healthy women in different geographic areas is also scarce, which creates a big gap in the development of effective preventive or therapeutic approaches to improve women's health [4]. It is also still unclear which is the dominant *Lactobacillus* species in Taiwan. Currently, four species, including *Lactobacillus crispatus*, *Lactobacillus gasseri*, *Lactobacillus iners*, and *Lactobacillus jensenii*, have been reported to be specifically inhabiting the human vagina [5], suggesting that the probiotic formulations of *Lactobacillus* species provided by the

authors must also include these species. In fact, a recent publication also supported the positive role of *L. crispatus* in improving women's health [6]. However, the probiotics supplement did not contain any of the aforementioned *Lactobacillus* species.

In conclusion, this recent publication of the *Taiwanese Journal of Obstetrics and Gynecology* underscored the importance of vaginal microbiome in women's health. Further understanding of the vaginal microbiome could provide a better chance to promote general health in the larger adult female reproductive-aged population.

Conflicts of interest

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

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