Contribution ID: **32** Type: **Oral Presentation**

Metabolomics and proteomics reveal the inhibitory effect of Lactobacillus crispatus on cervical cancer

Wednesday, August 27, 2025 10:55 AM (5 minutes)

Cervical cancer remains a significant global health issue due to its high morbidity and mortality rates. Recently, Lactobacillus crispatus has been recognized for its crucial role in maintaining cervical health. While some studies have explored the use of L. crispatus to mitigate cervical cancer, the underlying mechanisms remain largely unknown. In this study, we employed non-targeted proteomics and metabolomics to investigate how L. crispatus affects the growth of cervical cancer cells (SiHa) and normal cervical cells (Ect1/E6E7). Our findings indicated that the inhibitory effect of L. crispatus on SiHa cells was associated with various biological processes, notably the ferroptosis pathway. Specifically, L. crispatus was found to regulate the expression of proteins such as HMOX1, SLC39A14, VDAC2, ACSL4, and LPCAT3 by SiHa cells, which are closely related to ferroptosis. Additionally, it activated the tricarboxylic acid (TCA) cycle in SiHa cells, leading to increased levels of reactive oxygen species (ROS) and lipid peroxides (LPO). These results revealed the therapeutic potential of L. crispatus in targeting the ferroptosis pathway for cervical cancer treatment, opening new avenues for research and therapy in cervical cancer.

User consent

yes

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Session Classification: Lightning Talks